



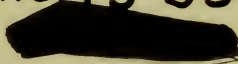


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BULLETIN No. 51

BUREAU OF EDUCATIONAL RESEARCH
COLLEGE OF EDUCATION

STIMULATING LEARNING ACTIVITY

By

WALTER S. MONROE
Director, Bureau of Educational Research
and

MAX D. ENGELHART
Assistant, Bureau of Educational Research



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BUREAU OF EDUCATIONAL RESEARCH
College of Education
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PREFACE

The topic of motivation is usually given considerable attention in books on methods of teaching. The earlier treatments were essentially theoretical, but within the past few years numerous questions relating to the stimulation of learning activity have been studied by research workers. It, therefore, seems worthwhile to present a systematic account of motivation in which the contributions of educational research are added to the theoretical discussion. As is pointed out in the pages of this bulletin, the contributions of educational research are fragmentary and in some cases not highly dependable, but it is believed that the findings resulting from the various studies make possible a more authoritative treatment than is now available in any of the texts on methods of teaching.

WALTER S. MONROE,
Director.

August 2, 1930

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STIMULATING LEARNING ACTIVITY

CHAPTER I

INTRODUCTION

The problems of motivation. Learning is an active process, and one phase of the teacher's responsibility is to secure adequate participation in appropriate learning activities by each pupil. All learning activities are responses to stimuli or complexes of stimuli, usually called "situations." Hence the problem of motivating appropriate pupil activities may be described as that of providing the right stimuli and situations. A direct request is one means of stimulating pupil activity. For example, the request, "Write the sentence, 'John came home yesterday'," will usually secure a writing response from fifth-grade pupils. Similarly, requests to look at a picture, to do an example, to give the spelling of a word, to repeat a memorized rule, or to read aloud a specified paragraph will stimulate learning activity, provided the pupil is not defiant, and the request is understood and is not too difficult.

Learning activity may also be stimulated by indirect procedures. For example, the teacher may "set the stage" by exhibiting pictures that will stimulate the pupils to ask questions. A book with an interesting title or one by a well-known author may stimulate reading. A comment relative to a current event frequently stimulates the asking of questions. A difficulty encountered in pursuing a purpose may be the cause of additional activity.

It should be noted that several of the preceding statements asserted that a certain stimulus or situation *may* produce a response. A given stimulus or situation cannot be depended upon to be effective with reference to all pupils and at all times. Even direct requests may not be effective, especially when the response is to be made later during a study period or at home. Certain types of stimuli and situations are more effective than others. A general request is less likely to be effective than a specific one. A request that is not clearly understood by the pupils is not likely to function as an effective stimulus. A "stage set" that is effective with a group of city children may not be effective in a rural school. A given group of pupils may respond to one "stage set" but not to another. Consequently, one problem of motivation is to determine what kinds of requests, both direct and indirect, are most effective in stimulating desired learning activities in the different types of pupil groups.

A second problem relates to the method of making requests in order to secure the maximum stimulation. For example, when asking a question, should the pupil whose response is desired be designated before or after the question is stated? How may the teacher "set the stage" most effectively? When should the assignment be made? What plan of instruction will secure the maximum stimulation of learning activity as a result of learning exercises assigned by the teacher?

Psychologists point out that mere repetition does not insure learning. Perfunctory activity does not represent efficient learning. A pupil may learn very little from writing the correct spelling of a word fifty times. Reading is a productive learning activity, but a pupil may read an assignment and learn very little. In order to be efficient, learning activity must be intense. There must be focalization of attention. When the learning activity extends over a period of several minutes or longer, there must be persistent effort. Hence, a third problem to be considered is how to secure focalization of attention and persistence of effort.

Repetition versus motivation. The principle that mere repetition does not insure learning deserves further comment. The Law of Exercise specifies that, *If other factors affecting learning remain unchanged, the strength of a modifiable connection between a situation and a response is increased as it is exercised and up to a certain limit the strength of the connection increases with the amount of exercise but not in a constant ratio.* A careful reading of this law will reveal that the qualifying clause, "if other factors affecting learning remain unchanged," implies that the learning effect of exercise (repetition) is influenced by other attendant factors. Among these factors a "desire to learn" is especially important. When there is no desire or effort to learn, there will be little or no learning. This point is implied in the emphasis upon "purposeful activity." As this term is commonly used, it means "activity for the purpose of learning."

As the result of an experimental inquiry, Thorndike has pointed out that "if a pupil spells reason, 'reason' twelve times out of twenty, 'reson' five times, and 'resun' three times, we cannot expect that mere repetition thereafter will increase the relative frequency of the correct spelling one jot or tittle. So far as its effect is concerned the 60 per cent for 'reason' will be no larger and the 15 per cent for 'resun' will be no smaller after ten thousand spellings. The selective force of mere repetition of a situation is zero."¹ In other words, repetition that is not

¹Thorndike, E. L. "Curriculum Research," *School and Society*, 28:575-576, November 10, 1928.

accompanied by a "desire to learn" does not qualify as learning activity.

Symonds and Chase² have reported an experiment with school children in which "repetition without motivation" is compared with "repetition with motivation." The repetition, which was the same for all groups, consisted of having the pupils read orally and in unison certain grammatically correct sentences. "Repetition without motivation" was secured by merely asking the pupils to read the sentences without any reference to English usage or to what they were expected to learn. There was, of course, some degree of motivation, or the pupils would not have responded to the request, but an effort was made to reduce it to a minimum. In a second group the repetition was motivated by telling the pupil the scores made on the initial test and by urging them to try to make better scores when the test was repeated. In a third group there was motivation to secure better English, but the repetition required of the other two groups was omitted. There was learning activity in the field of English usage but no drill upon the particular items of form covered by the tests used. The investigators concluded that the "amount of repetition" is more important than motivation. "Ten repetitions with only that minimum amount of motivation which habitually operates to cause pupils to do the accustomed work of the schoolroom and to carry out the instructions of the teacher caused more learning than any combination of three repetitions and more powerful types of motivation."³ This statement, however, implies that motivation is an important factor in learning and that when learning activity is strongly motivated, fewer repetitions are required to secure a given degree of achievement. "The value of the test motivation may be estimated as the equivalent of about five sheer repetitions."⁴

A single investigation should not be accepted as conclusive, but other investigators have concluded that motivation is even more important as a factor in learning.⁵ Hence it seems justifiable to conclude that, although there must be repetition, the activity must be accompanied by a relatively strong desire to learn in order to make the repetition efficient as learning activity.

A modification of the Law of Exercise needed. The preceding discussion makes clear that a modification of the Law of Exercise is

²Symonds, P. M. and Chase, D. H. "Practice vs. Motivation," *Journal of Educational Psychology*, 20:19-35, January, 1929.

³*Ibid.*, p. 31.

⁴*Ibid.*, p. 31.

⁵For example, see:

Knight, F. B. and Remmers, H. H. "Fluctuations in Mental Production When Motivation is the Main Variable," *Journal of Applied Psychology*, 7:209-23, September, 1923.

needed. It should be coupled with the supplementary Law of Intensity, which specifies that the strengthening effect of exercise of a modifiable connection depends upon the intensity of the exercise, or the focalization of attention. This means that, other things being equal, the maximum effect of exercise is secured when the pupil has a strong desire to learn—when he has a purpose.

This supplementary factor in learning has been designated in several ways. Among the more suggestive phases are “desire to learn,” “intention to learn,” “will to learn,” and “an inner persisting emotional desire.” Whatever form of designation is used, it seems to be clear that efficiency in teaching requires something more than the mere stimulation of learning activity.

The criterion of the effectiveness of motivation, learning activity versus the goals to be attained. The last sentence of the preceding paragraph implies an important principle. In considering the techniques of motivation, we tend to focus our attention on their immediate purpose—the stimulation of activities believed to be highly educative. Learning activity, however, is essentially only a means to an end. The ultimate purpose of motivation is to secure the acquisition of certain abilities by the various members of the class. This point should be kept in mind as the following pages are read. The real test of the value of a motivation procedure or device is to be found in the achievements of the pupils rather than in the learning activities that are stimulated.

The term, “pupil achievements” as it is used here, is not restricted to subject-matter outcomes. It includes attitudes, interests, study habits, and perhaps other similar outcomes. These types of achievement must be considered when evaluating motivation procedures. Teachers should, therefore, judge the effectiveness of their efforts to motivate school work by the achievements of their pupils rather than by the apparent qualities of the learning activities in which the pupils engage. It may happen that enthusiastic activity on the part of the pupils represents poor motivation. This situation is most likely to occur in drill work.

The plan of the following discussion of motivation. The problem of securing adequate pupil participation in appropriate learning activities has been discussed in a number of ways. The Herbartians, whose pedagogical theories began to affect educational practice about 1900, proposed procedures for the teacher to use in making school work interesting to the pupils. A little later Charters, who was influenced by Dewey, emphasized motivation by creating needs. More recent writers

on this topic have proposed the project method and an activities curriculum as means for securing motivation. The plan of the present discussion is reflected in the following list of questions. The first will be treated in Chapter II, the second and third, in Chapter III, and the fourth and fifth, in Chapter IV.

1. How may pupil purposes be aroused and encouraged?
2. What are the characteristics of learning exercises that are immediately interesting to pupils?
3. How should learning exercises be assigned in order to secure the strongest appeal?
4. What motivation devices may be used to supplement the stimulating effect of learning exercises so as to secure learning activity that is highly educative?
5. What devices may be used to secure continuance of learning activity at a satisfactorily high level of intensity?

CHAPTER II

STIMULATING AND ENCOURAGING PUPIL PURPOSES

Pupil purposes as motives. A purpose is a response to a stimulus or a group of stimuli, but a purpose is also a motive. In its milder forms it may be described as a "set" or "bent" favorable to the pursuit of a particular course of action, and in its stronger forms a purpose may be described as a "determination" to attain a particular goal. Many pupil purposes lead to participation in appropriate learning activity as a means of attaining the goal implied in the purpose. Hence we may appropriately consider the procedures by which pupil purposes may be stimulated and encouraged.

One important distinction should be noted. A purpose to do something is not necessarily a purpose to learn—to acquire certain abilities. It was pointed out on page 10 that pupil achievement is the real test of the effectiveness of motivation procedures. A "purpose to do" may develop into a "purpose to learn," but the chances of this development are greatly increased when the teacher keeps this distinction in mind and consciously attempts to stimulate a desire to learn.

Encouraging embryonic pupil purposes. Current events of the community, state, nation, and world; extra-curricular activities; out-of-school activities, such as travel; and the activities of the school frequently cause pupils to ask questions or to suggest doing certain things. In many instances a question or a suggestion will develop into a strong purpose, provided the teacher receives it sympathetically and gives it intelligent encouragement and guidance. Sometimes a purpose will grow out of a difference of opinion among the pupils or out of a question concerning the accuracy of a statement made by a pupil or the teacher.

The alert teacher who knows what to look for will discover many embryonic purposes among her pupils. The skillful teacher will be able to direct class discussions so that the number of embryonic purposes will be increased. Hotchkiss¹ describes a project that grew out of a pupil asking, "Why is Africa called the Dark Continent?" In attempting to secure the answer to this question, it became apparent that the class did not have an adequate concept of the topography, climate, vegetation, and so forth, of this continent, and plans were suggested and discussed for making Africa better known to the class and to other

¹Hotchkiss, E. A. *The Project Method in Classroom Work*. Boston: Ginn and Company, 1924, p. 55-71.

children in the school. It was decided to construct a large sand map on which would be represented all of the information about Africa that the class could assemble.

An important phase of motivation is encouraging and guiding embryonic purposes. In many classrooms appropriate learning activities appear to be spontaneous, the teacher serving only as a guide. In other classrooms a question or a suggestion offered by a pupil is not sympathetically received. Often it appears that the teacher is determined not to depart from a prepared plan for fear that attention to pupil questions will make it impossible to cover the ground specified by the course of study or by other requirements.

The failure of many teachers to encourage and cultivate pupil questions and suggestions results in a distinct loss in motivation. In addition to the loss occasioned by the failure to capitalize embryonic pupil purpose, the task of stimulating appropriate learning activities is doubtless made more difficult because of the unfavorable attitudes toward school work that may be engendered. What is likely to happen is illustrated by the testimony of one man who informed one of the present writers that throughout his secondary and college work his concept of learning was to memorize and not to think. He traced this concept to the unsympathetic reception accorded a question that he once asked in a general science class.

Taking advantage of opportunities for stimulating pupil purposes. Collings describes how the illness of two members of a group of school children formed the basis of a study of the causes of typhoid fever.² This in turn led to studies of the prevalence of diseases in the community and of how to combat the housefly. A report of the study of the prevalence of diseases formed the program of a community meeting at the school building.

A seed store project³ was initiated during a study of seeds by the teacher asking the children "if they would like to have a seed store in school and they, of course, were most enthusiastic." The class made (1) a seed store of big blocks, (2) boxes for seeds, (3) labels for the different kinds of seeds, and (4) baskets in which to gather the seeds.

A study of municipal sanitation grew out of the question, "Why should a city have pure water?"⁴ When it was found that the class could not answer this question, a committee consulted the city engineer

²Collings, Ellsworth. *An Experiment with a Project Curriculum*. New York: The Macmillan Company, 1923, p. 54-67.

³Vanderwalker, N. C., et al. "New Materials for the Kindergarten," *Twentieth Yearbook of the National Society for the Study of Education*, Part I. Bloomington, Illinois: Public School Publishing Company, 1921, p. 6.

⁴Lull, H. G., et al. "New Materials for the Junior High Schools," *Twentieth Yearbook of the National Society for the Study of Education*, Part I. Bloomington, Illinois: Public School Publishing Company, 1921, p. 140.

and arranged for the class to visit the city water plant. Another committee visited the health office and gathered data on health conditions in the city.

The lack of satisfactory information concerning vocations resulted in a class of junior high-school pupils taking the initiative in collecting this much-needed information for the school library.

Each pupil volunteered to obtain personal interviews from at least five prominent persons in the professions, trades, commercial lines, management, manufacturing, or farming, and to report these to the class for discussion. A series of questions was agreed upon by the class. Committees were formed to take charge of each type of interview, as lawyers, physicians, and so forth and to work over material collected and to formulate one comprehensive report on its vocation.⁵

"Setting the stage" as a means of stimulating pupil purposes. When a teacher desires to stimulate a particular purpose, she may accomplish this result by "setting the stage." Usually this procedure involves bringing to the classroom books, pictures, and other exhibitable materials. The teacher may suggest to the pupils that they bring to the classroom interesting objects, such as souvenirs collected on vacation trips, things that they have made, pictures, and books. As these are examined and talked about, it is almost certain that the pupils will ask questions or suggest things that they would like to do.

Teachers who have employed this procedure testify that sometimes the purpose developed is not the one they had planned to stimulate. In some instances a carefully planned stage-set failed to stimulate any purpose. When the purpose stimulated is not the one the teacher desired, she may utilize it if it seems appropriate. If not, she should set the stage again or adopt another plan of work.

Conferences and group discussions as a means of stimulating pupil purposes. Another means of stimulating pupil purposes is the conference or group discussion. A skillful teacher will usually be able to direct a discussion so that some of the members of the group will ask questions or suggest something to do. Collings⁶ tells how a discussion of a visit to a "Harvest Show" in a neighboring town led to the proposal by the pupils of a rural school that they organize a similar enterprise for their own community. At subsequent conferences of the group the project was planned,⁷ the teacher making occasional suggestions. A general program was agreed upon, and committees were appointed for the following activities: (1) Exhibits, (2) Speakers, (3) Dinner, (4) Prizes and Judges, (5) Date, and (6) Demonstra-

⁵*Ibid.*, p. 166.

⁶Collings, *op. cit.*, p. 101-116.

⁷Four neighboring schools were invited to participate in the "Corn Fair."

tions. Other committees were appointed for executing certain phases of the project. In carrying out the plans, programs and posters were printed. Each pupil planned and made one or more exhibits. Certain ones practiced demonstrations to give at the fair.

At the first conference after the "Corn Fair" the project was discussed. The teacher remarked that the fair had been successful—everything had worked out as they had planned it. She, however, suggested that if another one was held, certain improvements might possibly be made. The pupils also made a number of suggestions. At the request of the editor of the local paper the children wrote an account of their "Corn Fair," and at a conference they read the various articles that had been written. The one they considered best was chosen to be sent to the editor.

It is apparent from Colling's account that throughout this project the teacher was in the background. The pupils planned the various things to be done and did the work. The teacher offered a few suggestions, but many more came from the pupils. The group also criticized suggestions made by its members. The purpose also was the children's. The teacher probably assisted in its development, and perhaps may have been somewhat responsible for initiating it, but it was clearly a pupil project and not one imposed by the teacher and the school.

Purposes engendered by initiating participation in an activity. Frequently a purpose develops as a person participates in an activity. Many persons have become interested in golf as a result of trying the game. Some pupils who begin the study of a required subject with reluctance, develop a strong interest in it. A pupil who begins working with numbers may become interested in our present number system and its symbols as an invention.

As a pupil works on an assignment, he may become interested and accept as his purpose that of attaining the goal specified or implied by the request made by the teacher. This is most likely to happen when the assignment is in the form of a comprehensive problem. The assignment of a problem does not insure that a pupil purpose will develop. It may, or it may not. It should be noted, however, that the manner in which the assignment is made may have a potent influence upon the outcome.

Stimulating pupil purposes by creating needs. A need is created when the pupil encounters a difficulty in doing something that he considers worth while or that serves as a means of attaining a worth while goal. The necessary conditions are (1) something that the pupil values

and (2) an obstacle or difficulty that prevents his immediate attainment of this value. The "something that the pupil values" represents a purpose. When the pupil encounters a difficulty in attempting to realize this purpose the need created is the basis of a new purpose.

"Creating needs" is used to designate the general procedure whereby the activities of pupils are organized so that difficulties arise. Two cases require consideration: (1) the difficulty represents a natural or intrinsic prerequisite for the value the pupil desires to control; (2) the difficulty is created by imposing an arbitrary or artificial requirement.

A natural prerequisite will create a difficulty when the pupil is not fully prepared to do what he is permitted to attempt. For example, if the pupils attempt to publish a school paper before they have learned to spell correctly, to write grammatically correct sentences, and to do the other things involved in publishing a school paper, the need for such abilities will be created because they are natural prerequisites. The teacher's part in creating such needs is to organize the work psychologically and to permit pupils to attempt the realization of purposes even though she knows that they are not adequately prepared. This order is the opposite of that which teachers usually insist upon. Obviously a need will not arise when the teacher plans the work of the class so that the pupils are adequately prepared for doing everything they undertake.

It may occur to the reader that a policy of permitting pupils to attempt the realization of purposes for which they are not adequately prepared is likely to lead to chaotic and fragmentary learning and hence to inefficient teaching. This is a weakness of motivation by creating a need, and a teacher who adopts this procedure should plan whatever systematic instruction may be required to round out and consolidate the learning of her pupils. For example, suppose the arithmetic class is engaged in a series of activities, such as keeping a store or building a house. Difficulties will be encountered, and in satisfying the needs thus created, the pupils will learn much of what they are expected to learn in the field of arithmetic, but it is likely that there will be gaps in their achievement. When this is the case, the teacher is responsible for planning whatever supplementary instruction may be needed. Furthermore, it may be advisable at the end of the term or at other suitable intervals to introduce a systematic review for the purpose of securing the organization of what has been learned. If these things are done, the policy of permitting pupils to attempt the realization of purposes for which they are not adequately prepared is not likely to result in inefficient teaching. On the other hand, a logical organization under

which pupils have the opportunity to become prepared for all future tasks may prove deadening, because the pupils are constantly preparing for the future. Preparation for the future is not likely to appeal to children; hence, they may doubt the worth of what they are asked to do.

Creating a need by interposing arbitrary or artificial obstacles is not a highly desirable means of motivation. It should be thought of as a means that may be used when better procedures fail. On occasions, however, the teacher may create artificial needs by requiring the doing of certain learning exercises as a prerequisite for controlling certain values already appreciated. For example, most children enjoy "passing" in the subjects they are studying. Hence, an artificial need may be created by reminding pupils that they will fail in the course if they are not able to do certain test exercises. In a similar way, interest in securing high grades furnishes a basis for a need. If participation in athletic activities is dependent upon the attainment of a certain scholastic standing, those who are interested in athletics from this standpoint feel an artificial need for doing the learning exercises assigned.

Although artificial needs may be employed when other means of motivation fail, or prove inadequate, their use should not be exploited. Emphasis upon such goals as graduating with one's class, entering college, or being awarded school honors is likely to create the belief that the learning exercises that the pupils are asked to do have no other value than the artificial one placed upon them by the arbitrary demands of the teacher and the school.

Creating a need when the value is potential rather than active. In the preceding discussion it has been assumed that the pupils had formed a purpose that they wished to realize. In other words, an active value was assumed. It frequently happens that the pupils have not formed a definite purpose. In such cases the teacher faces the task of arousing the appreciation of a value.⁸ There are many values that are potential for pupils—values that they may easily be stimulated to appreciate. The teacher must be tactful in securing the appreciation of potential values. Appreciation involves an emotional response. If the teacher attempts to force the matter, she is likely to defeat her purpose. Arguing the case tends to place pupils on the defensive. A teacher can only set the stage.⁹ If appreciation does not follow, she must resort to other pro-

⁸"Appreciating a value" means that the control of it or the contemplation of controlling it gives satisfaction.

⁹A significant illustration of securing the appreciation of a potential value is furnished by Mark Twain's Tom Sawyer who induced his playmates to value the whitewashing of the yard fence. They wanted to perform the task because Tom appeared to want to do it.

cedures in securing the necessary motive. Haste in stimulating the appreciation of values frequently results in waste.

When pupils have two apparently conflicting facts brought to their attention, they frequently become interested in securing an explanation of the apparent inconsistency. When the proper setting or frame of mind has been created, questions, such as "Why?" "How?" "What will happen?" "Can it be done?", frequently secure the appreciation of potential values. A pupil tactfully approached with the query, "Can you do this task?" or "Do you think you can do it?" will frequently make the "doing" an active value. If the pupil's "instinct of pugnacity" has not atrophied, such queries will tend to become a challenge to him. The writers have known teachers who occasionally would imply that the task was difficult and not ordinarily done by pupils possessing the training of their classes.

Bagley cites an interesting illustration. When a history class came to the topic of Arnold's treason, the teacher made the assignment as follows: "The next few pages of the book tell about a very mean man. I do not think that I have ever heard of another man so mean and contemptible as he was. I don't know that it will pay us to spend very much time on this man; but, after all, it was a rather pathetic case, and you might read it over this evening." The teacher characterized the next day's recitation as the best he had secured from any class in history.¹⁰

When pupils already know something about a topic to be studied, a pretest given as a preliminary to the study of it sometimes is helpful. Many teachers of spelling, after assigning a list of words, give a test in order that the pupil's attention may be directed to the words that he needs to study. A test is an excellent means of creating a need for a review. Sometimes the asking of appropriate questions will create a need by calling the pupil's attention to the fact that he lacks certain essential information or that he is otherwise unable to give a satisfactory answer. In order that this procedure may be effective as a means of motivating learning activity, the teacher must leave to the pupil the answering of the question asked. When the answer is supplied for him, a pupil will not feel the need for securing it through his own efforts.

Critical evaluation of the work done has a stimulating effect upon many pupils, and laxity on the part of the teacher tends to encourage indifference and half-hearted efforts on the part of pupils. Every error is a potential source of a need; but unless an error is brought to the pupil's attention, it will not stimulate him to engage in learning activity.

¹⁰Bagley, W. C. *Classroom Management*. New York: The Macmillan Company, 1907, p. 202-3.

If he thinks that rambling and general responses in class will be accepted, he is likely to carry his learning only far enough to be able to give such responses. If he has learned from experience that the teacher will "help" him when he encounters a difficulty, he is likely to develop into a chronic "quitter" in school work.

Advantages of securing motive through creating a need. There are certain advantages in securing a motive by creating a need for certain controls of conduct. In the first place, when the values are intrinsic, this procedure emphasizes the use of what pupils learn, and thus tends to make the study of school subjects something more than preparation for a remote and indefinite future. A second advantage is that a pupil is led to appraise his ability in terms of use and to recognize his lack of ability if he is unable to satisfy the need. Some teachers insist that it is undesirable to direct attention to failures and shortcomings, and claim that pupils, especially those who are easily discouraged, will be made to feel that it is not worth while to try. Those who take this position point out that success is in itself an incentive and that it is much better to emphasize to the pupil the things that he is able to do. There is doubtless some validity in these contentions;¹¹ emphasis upon needs can be carried to an undesirable extreme, but a judicious use of this technique of motivation is one of the best means of securing the driving force necessary for persistent and continued participation in learning activities.

¹¹See pages 46-48 for experimental evidence on the motivating effect of knowledge of one's success.

CHAPTER III

ASSIGNED EXERCISES AS A MEANS OF STIMULATING LEARNING ACTIVITY

The questions to be considered. The effectiveness of assigned exercises in stimulating desired activities and the necessary accompanying desire to learn depends upon several factors. In attempting to describe the conditions under which the maximum effectiveness is secured, the following questions require consideration:

1. What is the significance of children's interests and preferences with respect to the effectiveness of learning exercises as stimuli?
2. What are the general characteristics of learning exercises that make them effective stimuli?
3. When and how should assignments be made to secure the maximum stimulation?
4. What is the effect of suggestions and directions for doing assigned exercises?

In studying the following pages, the reader should keep in mind the distinction between "mere activity" and "learning activity," which may be defined as activity accompanied by a desire to learn. In order to be effective as a means of instruction, an assigned exercise must stimulate "activity accompanied by a desire to learn." The stimulation of "mere activity" is not sufficient.

The meaning of interest in this discussion of motivation.¹ The word "interest" is used here to designate an unusual degree of sensitivity² to certain stimuli or types of stimuli. A boy who is interested in mechanical toys is very likely to respond to any stimulus related to such toys. A girl who is interested in dolls responds in characteristic

¹It seems unnecessary for our purpose to review the voluminous literature relating to the interests of school children. The reader who is interested may consult one or more of the following references:

Bagley, W. C., and Keith, J. A. H. *An Introduction to Teaching*. New York: The Macmillan Company, 1925, p. 175-9.

Charters, W. W. *Methods of Teaching*. Chicago: Row, Peterson and Company, 1912, p. 146-57.

Dewey, John. *Interest and Effort in Education*. Boston: Houghton Mifflin and Company, 1913. 101 p.

Parker, S. C. *Methods of Teaching in High Schools*. Boston: Ginn and Company, 1915, p. 149-53, 336-61.

Pillsbury, W. B. *Attention*. New York: The Macmillan Company, 1908. 346 p.

Thorndike, E. L. *Educational Psychology, Briefer Course*. New York: Teachers College, Columbia University, 1917, p. 14-15.

Waples, Douglas. "An Approach to the Synthetic Study of Interest in Education," *Journal of Educational Psychology*, 11:301-15, 369-84, 445-58, 502-16; September, October, November, December, 1920.

Woodworth, R. S. *Psychology, a Study of Mental Life*. New York: Henry Holt and Company, 1921, p. 244-48.

²This characteristic may also be described as a state of readiness to respond to certain stimuli or types of stimuli.

ways to stimuli related to dolls. A child who is interested in competitive games responds to opportunities to participate in such games. Hence, an assigned exercise that touches a pupil interest is more likely to arouse learning activity than one that is not related to pupil interests.

In addition to the sensitiveness that tends to insure a response, the interest leads to a strong focalization of the attention. Another significant characteristic of an interest, at least of those commonly designated as active, is a desire to continue the act of responding to the thing in which one is interested.

An interest may be permanent, or at least it may persist for several days, weeks, or months. On the other hand it may be only temporary—created for the occasion. In the following discussion we shall be concerned with interests that are relatively permanent.

Pupil interests versus pupil preferences. In considering pupil interests with respect to the problem of motivation, it is important to distinguish between them and mere preferences. As the term "preference" is commonly used it represents the pupil's choice between two or more school subjects, topics, learning exercises, or proposed activities. The expression of a preference for one stimulus or situation does not necessarily mean that the pupil possesses little or no sensitiveness for the other stimuli or situations of the group from which the choice was made. In many instances the pupil is almost equally sensitive to the several stimuli of the group, and the preference expressed is largely a matter of chance or is determined by factors of minor significance, such as the preferences expressed by other pupils, or the expressed or anticipated approval of the teacher. An "interest," on the other hand, represents something more fundamental. We say that children are interested in games but that they prefer certain games, some at one time and others at another.

Interests of children. During the child-study movement, which became prominent during the last decade of the nineteenth century, there were many studies to determine the types of things in which children were most interested; i.e., the types of things which made the strongest immediate appeal to them. It was thought that if the interests of children were determined, they would afford a basis for devising effective learning exercises. The results of two studies are given in the quotations below to illustrate the type of information obtained by this method.

Certain collections stand out much more prominently than others, especially cigar-tags, stamps, bird's eggs, marbles, and shells. These are prominent

among both boys and girls, though all but shells much more so among the boys. Certain collections rank high, but more particularly among the girls, as picture cards, pictures, buttons, pieces of cloth, silk, etc., dolls, paper dolls. Then follow some, as books, rocks, leaves, flowers, ribbons and others, which have a fair following."³

It will be observed that there are four subjects for which the girls care very little, namely, earthquakes and volcanoes, industry and invention, plants and animals, and especially the history of some science These subjects are all placed higher in the boys' list⁴

An investigation has been reported recently by Whitley which is quite in agreement with that conducted by Burk thirty years ago.

Our returns corroborate Burk's in that interest in marbles, coupons, trivial things belongs chiefly to the younger years. Also that more boys than girls care for stamps, marbles, pieces of metal; more girls care for pieces of cloth, trimmings, ribbon, beads, and doll accessories.⁵

Witty and Lehman⁶ have criticized the investigations of Burk and Whitley with respect to the terminology used and with respect to the interpretation of their data. Witty and Lehman list 196 collections and the frequency with which these types were collected by 1,676 children. They report, for example, that the ten items most frequently collected in September by the ten-year-old boys participating in their study are marbles, kites, coins, newspapers, tops, tools, bullets, nails, furs, and knives. The ten items most frequently collected in September by ten-year-old girls are letters, story books, drawings, pictures, samples, handkerchiefs, poems, riddles, flowers, and curios. Similar lists are given for March and for the age levels, nine and eleven. The report of this study closes with an excellent discussion of the pedagogical implications of the findings.

Writing in 1929, Kirkpatrick states that in the earlier grades children are interested "in colors rather than in form, and in animals and children rather than in adults."⁷ Terman and Wyman⁸ have reported a study of the interests of gifted children that also contains information with respect to average children, since such children were used as controls. Activities that were rated as highly interesting to the control boys were general reading, games requiring much physical exercise, playing with several other persons, parties, picnics, club meetings, and activities in which tools, apparatus, and machinery were used. Activi-

³Burk, C. F. "The Collecting Instinct," *Pedagogical Seminary*, 7:185, July, 1900.

⁴Gillet, Cephas. "A Study in Interests," *Pedagogical Seminary*, 14:323, September, 1907.

⁵Whitley, M. T. "Children's Interest in Collecting," *Journal of Educational Psychology*, 20:249-61, April, 1929.

⁶Witty, P. A. and Lehman, H. C. "Further Studies of Children's Interest in Collecting," *Journal of Educational Psychology*, 21:112-27, February, 1930.

⁷Kirkpatrick, E. A. *Fundamentals of Child Study*. New York: The Macmillan Company, 1929, p. 224. (Fourth edition, revised).

⁸Terman, L. M. and Wyman, J. B. "Scholastic, Occupational, and Other Interests," *Genetic Studies of Genius*, Vol. I. Stanford, California: Stanford University Press, 1925, p. 378-9.

ties highly interesting to the control girls were general reading, music, drawing, dancing, games requiring much physical exercise, playing with several other persons, parties, picnics, club meetings, sewing, cooking, and housework. Interests of the gifted children were so similar as to prompt the statement, "The typical gifted child likes vigorous games, plays with tools and apparatus, likes the companionship of others, and shows no abnormal fondness for solitude or study." The conclusions of Witty and Lehman⁹ do not agree with this. They contend that gifted children are more interested in solitary and less vigorous play and are much more interested in reading. They found extreme interest in social play to be a characteristic of retarded children.

Hall and his followers emphasized the transitory character of interests and attempted to see in changes of interests a proof of the doctrine of recapitulation.¹⁰ Thorndike¹¹ and Brooks¹² have refuted the contention that intellectual development is subject to the changes claimed by Hall and his coworkers. In this connection, Lehman and Witty state, "attempts to differentiate certain chronological age periods in terms of differences displayed by children in diversity of play activities during these periods seem unjustifiable."¹³ It would seem logical to suppose that interests of children are different at different ages because of environmental influences, such as opportunities for certain kinds of activities afforded by different types of schools; organizations, such as the Boy Scouts or Camp Fire Girls; and the like. They may also differ, because the satisfaction of certain interests requires certain levels of maturity and intellectual development before ability is acquired to participate in the interesting activity.¹⁴

The question of the innateness of interests and of their transitory character is a problem more vital to pure psychology. The existence of interests, whether native or acquired, and the ages at which certain interests are prevalent among the children we are engaged in teaching are more important problems for our purposes. As teachers we need information concerning the relative appeal to children of the different school subjects and of the various types of learning exercises. Our present information is inadequate. More is known about pupil prefer-

⁹Witty, P. A. and Lehman, H. C. "The Play Behavior of Fifty Gifted Children," *Journal of Educational Psychology*, 18:259-65, April, 1927.

Lehman, H. C. and Witty, P. A. "Play Activity and School Progress," *Journal of Educational Psychology*, 18:318-26, May, 1927.

¹⁰For example see: Hall, G. S. *Adolescence*, Vol. II. New York: D. Appleton and Company, 1916, p. 2.

¹¹Thorndike, E. L. *Educational Psychology*, Vol. I. New York: Teachers College, Columbia University, 1913, p. 245-69.

¹²Brooks, F. D. "Changes in Mental Traits With Age, Determined by Annual Re-tests," *Teachers College, Columbia University Contributions to Education*, No. 116. New York: Bureau of Publications, Teachers College, Columbia University, 1921. 86 p.

¹³Lehman, H. C. and Witty, P. A. "Periodicity and Play Behavior," *Journal of Educational Psychology*, 18:118, February, 1927.

¹⁴For a statement of this view see: Pillsbury, *op. cit.*, p. 54.

ences, but, as pointed out on page 21, preferences appear to be less important than interests. It will be helpful, however, to summarize the results of a few studies of pupil preferences.¹⁵

Pupil preferences with respect to school subjects. Taylor¹⁶ conducted an early questionnaire study of interests in school subjects in which returns were secured from 756 elementary-school children. The order of popularity of school subjects was found to be: arithmetic, history, geography, spelling, reading, grammar, drawing, writing, music, and nature study. The conclusions of Columba¹⁷ both agree and disagree with those of Taylor:

It is evident . . . that arithmetic and history are the most popular school subjects . . . Language and grammar and penmanship are the most disliked subjects. Geography and nature study are somewhat disliked, yet in most instances they are preferred to reading.

Commins and Shank¹⁸ state as a result of their investigation that pupils prefer reading to arithmetic. Garretson¹⁹ has reported that elementary-school children dislike arithmetic, mechanical drawing, nature study, and physiology, but like grammar, penmanship, composition, and spelling. Thorndike²⁰ secured from a group of graduate students information with respect to their interests in high-school courses. His conclusions state that, "The subjects which have 'real' and modern content are preferred to those which are 'formal' or 'abstract' or not obviously concerned with modern life. English literature, history, and science are beyond question the three most liked . . . Latin is at the bottom. English composition, algebra, and geometry are about alike."

An examination of the results of these studies yields the conclusion that there is little agreement with respect to what school subjects pupils are most interested in. It is possible that further research will show that certain school subjects are inherently more interesting than others. It may be that the lack of agreement reported is due to the failure of investigators to secure random samples of school children. The differences could be due to the fact that the children forming the groups studied had different experiences with school subjects. The contra-

¹⁵The reader will note that a clear distinction between preferences and interests is not always maintained.

¹⁶Taylor, J. S. "Some Practical Aspects of Interest," *Pedagogical Seminary*, 5:497-511, April, 1898.

¹⁷Columba, Sr. M. "A Study of Interests and Their Relations to Other Factors of Achievement in the Elementary School Subjects," *The Catholic University of America, Educational Research Bulletin*, Vol. I, No. 7. Washington: The Catholic University Press, 1926, p. 34.

¹⁸Commins, W. D., and Shank, T. B. "The Relation of Interest to Ability in School Subjects," *Elementary School Journal*, 27:768-71, June, 1927.

¹⁹Garretson, O. K. "Relationships Between Expressed Preferences and Curricular Abilities of Ninth Grade Boys," *Teachers College, Columbia University Contributions to Education*, No. 396. New York: Bureau of Publications, Teachers College, Columbia University, 1930, p. 29.

²⁰Thorndike, E. L. "The Interests of Teachers in Studies During Their High School Course," *School and Society*, 17:419-20, April 14, 1923.

dictory character of the findings does not disprove that children, individually, do have greater interest for some school subjects than for others. For example, one child may have great interest for arithmetic and little for geography, while another child may be more interested in geography than in arithmetic.

The motivating effect of subject preference. While it is uncertain which school subjects are of greatest interest to children generally, it has been found that preferences for subject-matter have a motivating influence. Several studies have been reported which show that there is a definite relationship between subject preferences and abilities in the school subjects.²¹ Preference and ability tend to go together, but it is impossible to say that one is the cause of the other. It is probable that ability already possessed requires the stimulus of interest to cause its use in a given activity. It is also probable that increase of ability resulting from the participation in an activity results in an increased interest in the activity.²² Children may like to perform an activity because they know they have the ability to perform it. Whatever the causal relationships involved, a teacher does well to capitalize interests that children bring to their study of school subjects. The possession of interest in a given school subject is an asset in stimulating learning activity in that subject. Absence of such an interest is to be regretted, but it is also to be remedied by effective teaching, since interest will develop with the acquisition of ability. Whatever may be the source of interest in a particular school subject, there is little reason to doubt its motivating influence.

The preferences of pupils with respect to learning exercises. Although our information concerning the preferences of pupils with respect to learning exercises that may be employed in the various subjects of study is fragmentary, there have been studies in several fields. In the following pages evidence is presented for reading materials, arithmetical problems, composition topics, visual materials, and laboratory and shop work. Following the presentation of this evidence, the

²¹Bridges, J. W. and Dollinger, V. "Correlation Between Interests and Abilities in College Courses," *Psychological Review*, 27:308-14, July, 1920.

Columba, *op. cit.*

Commins and Shank, *op. cit.*

Cunningham, A. B. "Student Grades in Required and Elective Courses," *Pedagogical Seminary*, 30:389-92, December, 1923.

Fryer, Douglas. "Interest and Ability in Educational Guidance," *Journal of Educational Research*, 16:27-39, June, 1927.

Garretson, *op. cit.*

Thorndike, E. L. "Permanence of Interests and Their Relation to Abilities," *Popular Science Monthly*, 81:449-56, November, 1912.

Thorndike, E. L. "Early Interests: Their Permanence and Relation to Ability," *School and Society*, 5:178-79, February 10, 1917.

Thorndike, E. L. "Correlation Between Interest and Ability in College Courses," *Psychological Review*, 28:374-76, September, 1921.

Wyman, J. B. "Tests of Intellectual, Social, and Activity Interests," *Genetic Studies of Genius*, Vol. I. Stanford, California: Stanford University Press, 1925, p. 455-83.

²²See page 33 for further discussion of this relationship.

motivating effect of pupil preferences for learning exercises will be considered.

Reading materials. There have been a number of investigations to determine the types of material that pupils like to read.²³ Among the pioneer studies in this field are those of Abbott,²⁴ Bullock,²⁵ Irving,²⁶ Smith,²⁷ Vostrovsky,²⁸ and Wissler.²⁹ In 1921 Jordan³⁰ reported a comprehensive investigation of the reading interests³¹ of elementary-school children in which the conclusion was reached that reading interests of boys and girls are very dissimilar; that boys are interested in books on war and scouting, books on school and sports, books concerned with the Boy Scouts, books of strenuous adventure, and in non-fiction pertaining to what-to-do and how-to-do. The interests of the girls was found to be in fiction of the following types: home, home and school, school, fairy stories, stories with historical background, and stories of love. What interest girls were found to have in nonfiction was toward that which pertained to cooking, crocheting, dramatics, and poetry. The conclusions of this study are in rather close agreement with those of Vostrovsky³² with respect to the greater interest of boys

²³For lists of titles of reading materials the reader should consult the following references:

Baird, G. M. P. "What One Hundred Freshmen Read," *School and Society*, 4:254-7, August 12, 1916.

Danielson, C. L. "Magazine Reading of Children of Superior Mental Ability," *Educational Research Bulletin* (Los Angeles City Schools), 6:7-9, December, 1926.

Elder, Vera and Carpenter, H. S. "Reading Interests of High School Children," *Journal of Educational Research*, 19:276-82, April, 1929.

Huber, M. B. and Chappellear, C. S. "Children's Magazine Reading," *Journal of Educational Method*, 6:145-49, December, 1926.

Jordan, A. M. "Children's Interests in Reading," *Teachers College, Columbia University Contributions to Education*, No. 107. New York: Bureau of Publications, Teachers College, Columbia University, 1921. 143 p.

Kimball, R. S. "What Magazines Do High-School Students Read?" *School and Society*, 24:486-88, October 16, 1926.

King, C. E. "Favorite Poems for Children of Elementary Age," *Teachers College Record*, 23:255-73, May, 1922.

Lancaster, T. J. "A Study of the Voluntary Reading of Pupils in Grades IV-VIII," *Elementary School Journal*, 28:525-37, March, 1928.

Severance, H. O. "Magazines Which High School Pupils Read," *The School Review*, 34:587-90, October, 1926.

Terman, L. M. and Lima, Margaret. *Children's Reading*. New York: D. Appleton and Company, 1926. 364 p.

Uhl, W. L. *The Materials of Reading*. New York: Silver, Burdett and Company, 1924, p. 97-162.

Wheeler, Theodora. "A Study of Certain Recreational Reading and Vocational Phases in the Lives of Young Girls," *Journal of Educational Psychology*, 11:481-501, December, 1920.

²⁴Abbott, Allan. "Reading Tastes of High School Pupils," *School Review*, 10:585-600, October, 1902.

²⁵Bullock, R. W. "Some Observations of Children's Reading," *Journal of the Proceedings of the National Education Association*, Vol. 36. Washington: National Education Association, 1897, p. 1015-21.

²⁶Irving, A. P. "Home Reading of School Children," *Pedagogical Seminary*, 7:138-40, April, 1900.

²⁷Smith, F. O. "Pupils' Voluntary Reading," *Pedagogical Seminary*, 14:208-22, June, 1907.

²⁸Vostrovsky, Clara. "A Study of Children's Reading Tastes," *Pedagogical Seminary*, 6:523-35, December, 1899.

²⁹Wissler, Clark. "The Interests of Children in the Reading Work of the Elementary Schools," *Pedagogical Seminary*, 5:523-40, April, 1898.

³⁰Jordan, *op. cit.*

³¹The reader should note that the phrase "reading interests," which is commonly used, is essentially a synonym for "reading preferences."

³²Vostrovsky, *op. cit.*

for books of adventure and with respect to their greater interest for nonfiction. Wissler's conclusion with respect to the greater interest of girls for poetry agrees with that of Jordan.³³

Anderson³⁴ conducted a questionnaire study in which returns were secured from 588 high schools. The returns showed that high-school pupils do much reading outside of school; that girls read more than boys and read more widely; that boys like books of adventure; that girls are interested in sentiment, beauty, and refinement of style; and that both boys and girls read an overabundance of light periodical literature. Bell and Sweet³⁵ also report that girls are most interested in light fiction; boys, in books of adventure. It was further reported that girls have more regard for style than have boys. Eaton³⁶ reported a questionnaire study in which it was found that boys of high-school age read more history, science, essays, and books of travel, and that girls read more poetry and religion, so far as non-fiction is concerned. Elder and Carpenter³⁷ studied the reading interests of 487 high-school girls. Their conclusions agree with those of other investigators who found that girls are most interested in fiction and little interested in nonfiction. Uhl³⁸ investigated the interests of junior high-school pupils in informational reading selections. Several selections were presented to eighty-two seventh- and eighth-grade pupils who were asked to report whether or not they liked the selections and to state their reasons for their like or dislike. The conclusions state that the children were interested in the informational material presented to them in this investigation and that the lack of interest customarily shown by children to the traditional informational reading material is possibly due to the way in which it is written rather than to the informational content itself. The types of reading interests of boys and girls of elementary and high-school age may be summarized by stating that boys are most interested in the fiction of adventure and are interested in nonfiction of the "how to make and do" type, while girls are almost wholly interested in fiction relating to people like themselves or like they will grow to be.³⁹

³³Wissler, *op. cit.*, p. 537.

³⁴Anderson, R. E. "A Preliminary Study of the Reading Tastes of High School Pupils," *Pedagogical Seminary*, 19:438-60, December, 1912.

³⁵Bell, J. C. and Sweet, I. B. "The Reading Interests of High School Pupils," *Journal of Educational Psychology*, 7:39-45, January, 1916.

³⁶Eaton, H. T. "What High School Students Like to Read," *Education*, 43:204-9, December, 1922.

³⁷Elder and Carpenter, *op. cit.*

³⁸Uhl, W. L. "The Interests of Junior High School Pupils in Informational Reading Selections," *Elementary School Journal*, 22:352-60, January, 1922.

³⁹The reader should consult the following references for discussions of the reading interests of college students and of adults:

Grace, A. G. "The Reading Interests of Adults," *Journal of Educational Research*, 19:265-75, April, 1929.

Gray, W. S. and Munroe, Ruth. *The Reading Interests and Habits of Adults*. New York: The Macmillan Company, 1929. 305 p.

The investigations of Cleveland,⁴⁰ Coy,⁴¹ Rohn and Briggs,⁴² and Terman and Lima⁴³ have shown that the interests in reading of superior children does not differ greatly from that of average children, except with respect to quality. For example, Terman and Lima reported that gifted and average children were, both, most interested in adventure and informational fiction, but that gifted boys were much more interested in books on history, biography, and science than were average boys. In an investigation of the influence of intelligence on reading interests, Huber⁴⁴ reports that while the reading interests of children at different levels of intelligence are much the same, dull children showed a significant preference for material of the "familiar experience" type and were somewhat less interested in humorous selections than were the average or bright children. Weekes⁴⁵ has reported that the ability to comprehend poetry influences children's interests with respect to it. Green⁴⁶ has also reported a correlation between reading interest and reading ability. With respect to the factors influencing children's interests in reading, Dunn⁴⁷ has reported the following conclusion:

Kirkpatrick, J. E. "What They Read," *School and Society*, 12:559-60, December 4, 1920.

Rasche, W. F. "The Reading Interests of Young Workers," *Vocational Educational Monograph*, No. 9. Milwaukee, Wisconsin: Milwaukee Vocational School, 1925. 102 p.

Severance, H. O. "What Do University Students Read?" *School and Society*, 23:726-28, June 5, 1926.

The following references will prove helpful to one who is interested in motivating and directing the voluntary reading of children:

Davis, Georgia. "Encouraging the Leisure-Time Reading of Elementary School Pupils," *Elementary School Journal*, 29:586-89, April, 1929.

James, M. E. "Use of Classroom Libraries to Stimulate Interest and Speed in Reading," *Elementary School Journal*, 23:601-8, April, 1923.

Rasche, W. F. "Methods Employed to Stimulate Interests in Reading," *School Review*, 37:29-36, 124-31, 204-14, 293-303; January, February, March, April, 1929.

Uhl, W. L. *The Materials of Reading*. New York: Silver, Burdett and Company, 1924. 386 p.

Shang has devised a technique for the application of criteria of children's interests to the selection of reading material.

Shang, C. I. "A Method of Selecting Foreign Stories for American Elementary Schools," *Teachers College, Columbia University Contributions to Education* No. 398. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 46 p.

An excellent summary of the research on reading interests of children is given by:

Celestine, Sister M. "A Survey of the Literature on the Reading Interests of Children of the Elementary Grades," *The Catholic University of America Educational Research Bulletin*, Vol. 5, No. 2 and 3. Washington: The Catholic Education Press, 1930. 114 p.

⁴⁰Cleveland, Elizabeth. "Some Further Studies of Gifted Children," *Journal of Educational Research*, 4:195-99, October, 1921.

⁴¹Coy, G. L. "The Interests, Abilities, and Achievements of a Special Class of Gifted Children," *Teachers College, Columbia University Contributions to Education*, No. 131. New York: Bureau of Publications, Teachers College, Columbia University, 1923. 194 p.

⁴²Rohn, R. W. and Briggs, T. H. "Intelligence and Literature," *School and Society*, 18:508-10, October 27, 1923.

⁴³Terman, L. M. and Lima, Margaret. *Children's Reading*. New York: D. Appleton and Company, 1926. 364 p. See also:

Terman, L. M. and Lima, Margaret. "Reading Interests," *Genetic Studies of Genius*, Vol. I. Stanford, California: Stanford University Press, 1925, p. 441-54.

⁴⁴Huber, M. B. "The Influence of Intelligence Upon Children's Reading Interests," *Teachers College, Columbia University Contributions to Education*, No. 312. New York: Bureau of Publications, Teachers College, Columbia University, 1928. 39 p.

⁴⁵Weekes, B. E. "The Influence of Meaning on Children's Choices of Poetry," *Teachers College, Columbia University Contributions to Education*, No. 354. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 50 p.

⁴⁶Green, J. L. "When Children Read for Fun," *School and Society*, 16:614-16, 17:390-92; November 25, 1922, April 7, 1923.

⁴⁷Dunn, F. W. "Interest Factors in Primary Reading Material," *Teachers College, Columbia University Contributions to Education*, No. 113. New York: Bureau of Publications, Teachers College, Columbia University, 1921, p. 61.

In conclusion it may be stated that whereas individual differences in native interest tendencies undoubtedly exist, environment, including education, the natural experiences of the home and their artificially devised supplementation in the school, have large effect. Age, sex, advancement, comprehension, the experiences upon which reading matter is based, and the method of its presentation, all appear to share in the modification and development of the original stock of interests.

Arithmetic problems. Soon after the appearance of Warren Colburn's *First Lessons* in 1821, mental arithmetic became popular and was recognized in many schools as a subject coördinate with written arithmetic. This emphasis upon mental arithmetic and the widespread acceptance of the doctrine of formal discipline resulted in a large accumulation of "problems" that were primarily arithmetical puzzles. When the doctrine of formal discipline was attacked about 1890, these learning exercises and the problems based on obsolete commercial practices were criticized as being "abstract" and, hence, uninteresting to pupils. It was also maintained that calculation exercises, especially of the more difficult type, were disliked by pupils. On the other hand, it was claimed that pupils were naturally interested in "real" or "practical" problems, and those arising in their own activities.

There have been few studies of children's interests with respect to arithmetical problems. The fact that arithmetic has been one of the best liked subjects in the elementary school suggests that calculation exercises, puzzles, and obsolete problems are not totally without interest to pupils. A recent study by Bowman⁴⁸ reports the problem preferences expressed by a group of over six hundred junior high-school pupils. The order of preference for different types was found to be (1) computation, (2) child, (3) adult, (4) science, and (5) puzzle.

Composition topics. Harris⁴⁹ has reported a study of pupil choices of composition topics in which it was found that both boys and girls like to write about their own personal experiences. The preference for personal experiences has been confirmed by the investigations of Courtis,⁵⁰ Webster and Smith,⁵¹ and Kimmins.⁵² Harris showed also that boys prefer to write about actual personal experiences, while girls like to write about imaginary personal experiences.⁵³ With respect to topics

⁴⁸Bowman, H. L. "The Relation of Reported Preference to Performance in Problem Solving," *University of Missouri Bulletin*, Vol. 30, No. 36. Education Series, No. 29. Columbia: University of Missouri, 1929. 52 p.

⁴⁹Harris, J. H. "An Inquiry Into the Compositional Interests of Pupils in the Seventh and Eighth Grades," *English Journal*, 2:34-43, January, 1913.

⁵⁰Courtis, S. A. "English Composition," *The Gary Public Schools: Measurement of Classroom Products*. New York: General Education Board, 1919, p. 233.

⁵¹Webster, E. H. and Smith, D. V. *Teaching English in the Junior High School*. Yonkers-on-Hudson, New York: World Book Company, 1927, p. 78.

⁵²Kimmins, C. W. "Methods of Expression Used by London Children in Essay Writing at Different Ages," *Journal of Experimental Pedagogy and Training College Record*, 3:289-95, June, 1916.

⁵³Harris, *op. cit.*, p. 40.

related to fields of subject-matter, manual training and cookery stand high on Harris' list, while civil government, geography, physiology, and hygiene are at the bottom. Webster and Smith report that the preferences following personal experience topics are imaginative themes, how to do or make things, school expeditions and community enterprises, and current events or community problems, in the order named.⁵⁴ Relative to sex differences in preferences for composition topics, Kimmins found that in compositions written about the war boys discussed details in an impersonal way, while girls were more emotional—writing about the suffering sometimes with reference to their own relatives.⁵⁵

The teachers of ten thousand junior high-school pupils, when asked to give their judgments relative to the topics most likely to yield successful themes, ranked them as follows: personal experience, imaginative themes, how to do or to make things, school expeditions and community enterprises. The order is exactly that of the preferences as ranked by the pupils.⁵⁶

Visual materials. It is scarcely necessary to present evidence of the preference of pupils for visual materials of various types. As pointed out on page 22, pupils are interested in things that they can see or manipulate. The following report of a teacher of English illustrates the appeal that is characteristic of moving pictures:

At the beginning of their study of *Silas Marner*, the pupils were told that a moving picture of the book would be shown to them . . . The promise of a "movie" stimulated the class like an electric current. The idea that a school book was actually suitable material for a movie gave it a charm never before associated with the textbook, which had ever been the symbol of "all work and no play." A *movie*! They would study *Silas Marner* in order to understand and enjoy the movie.⁵⁷

In an investigation of visual aids for use in geography, Skinner and Rich report the belief of some of the teachers and all of the pupils that moving pictures make the study of geography more interesting.⁵⁸

Stephan Chapman Simms, curator of the N. W. Harris Extension of the Field Museum of Natural History has been quoted as saying:

. . . traveling cases of birds, beasts, and insects furnish the liveliest possible subject-matter for themes. Pupils take a genuine interest in collecting data and preparing their essays.⁵⁹

⁵⁴Webster and Smith, *op. cit.*, p. 78.

⁵⁵Kimmins, *op. cit.*, p. 295.

⁵⁶Webster and Smith, *op. cit.*, p. 79.

⁵⁷Cunningham, Adelaide. "Teaching English with the Movies," *The English Journal*, 12:488, September, 1923.

⁵⁸Skinner, C. E. and Rich, S. G. "Visual Aids in Geography: An Experiment," *Elementary School Journal*, 25:704, May, 1925.

⁵⁹Belfield, L. M. "The Visual Idea Functioning Through Museums," *Visual Education*, 2:10, September, 1921.

Freeman and others have reported the results of several experiments in the use of visual aids in education, the conclusions of which are in favor of a limited or restricted use of such devices.⁶⁰ Among the general conclusions presented with respect to the use of motion pictures as a visual aid is one which states that they are not of "outstanding and unparalleled value as a means of awakening interest in a subject or of stimulating activity, in comparison with advanced modern methods of instruction."⁶¹

Among other visual aids to instruction are those that are prepared by the children themselves. Important among these are models, such as those of historical periods, or of scenes of foreign countries. It has been felt that one of the values of preparing such models is that of stimulating interest in the activity itself, and in the subject-matter which the model represents. For example, Atwood states that "when the groups were completed, they were viewed several times by other children in the school. They aroused an unusual interest because they were the work of other children."⁶²

Charts, graphs, and maps are recognized as useful visual materials. Laird states that the "use of strikingly drawn charts undoubtedly adds interest to a lecture presentation."⁶³ Bell, in an article describing the use of posters in the teaching of chemistry, gives two reasons for their use. The activity of making posters engenders in the pupil an interest in looking for scientific material which may be contained in publications that he reads. The pupils in the lower classes of the high school become interested in chemistry as a field of subject-matter because of the posters.⁶⁴

Auerbach and Chiles, in their discussion of various types of visual presentation, state that graphs are of value in awakening interest, because arrows and connecting lines are suggestive of action and in this way attract the eye. They further insist that the use of graphs lends animation to material otherwise uninteresting, "thereby making it dynamic and life-like, and its message more real and humanistic."⁶⁵

In concluding this discussion of the effectiveness of visual materials in securing motivation through interest, the school journey should not be overlooked. Trips to places of educational interest are frequent

⁶⁰Freeman, F. N., et al. *Visual Education*. Chicago: University of Chicago Press, 1924. 391 p.

⁶¹*Ibid.*, p. 76.

⁶²Atwood, W. W. "Habitat Groups in the Teaching of Geography," *Visual Education*, 1:36, May, 1920.

⁶³Laird, D. A. "The Memory Value of Charts in College Lecture Courses," *School and Society*, 19:381, March 29, 1924.

⁶⁴Bell, F. L. "Posters in Chemistry," *Journal of Chemical Education*, 5:167, February, 1928.

⁶⁵Auerbach, H. B. and Chiles, G. S. "The Art of Visual Presentation," *Visual Education*, 2:21, October, 1921.

occurrences in Germany, France, and other European countries, but in the United States school journeys, except field trips and visits to local industries, are found in only an occasional school. The advocates of this supplementary means of instruction claim that the visits to historic spots, museums, art galleries, factories, and the like "stimulate interest in natural as well as man-made things and situations and enables students to know intimately their environment."⁶⁶

Laboratory and shop work. In the school laboratory the manipulation of apparatus, the observation of colors and of things in motion, and the freedom from the restraint of classroom work appeal to pupils. All types of laboratory work are, however, not equally interesting. It is probable that sex differences in interests for laboratory work exist. If the experiment illustrates phenomena too difficult for the inexperienced pupil to understand, or requires manipulation more compatible with the abilities of an expert in the science, the interest with which the experiment was begun is soon lost.

The learning activities of the school shop may be motivated by interests in the activities themselves, or by interests in the material outcomes of the activities. The former is probably the more desirable type of motivation, since the boy who possesses an interest in an activity for its own sake is more apt to strive for skill in the activity. The boy who is primarily interested in the possession and use of the thing he is constructing may neglect the activities by which it is constructed. That is, the interest in having the thing may cause the boy to be satisfied with poorer construction in order to gain the thing sooner. However, if the pupils acquire the ideals of good workmanship which the instructor strives to engender in them, interests in the things constructed may secure effective motivation of the activities of construction.

The significance of pupil interests and preferences for learning exercises. As suggested on page 21, an interest or a preference appears to represent a state of readiness with respect to the object of the interest or preference. In view of the emphasis upon readiness as a condition of learning, it seems logical to say that, other things being equal, preferred types of exercises are more effective stimuli than are other types, but, as in other phases of methodology, a priori reasoning should not always be trusted. The degree of superiority can be determined only by investigation. Unfortunately, there are only a few studies bearing on this aspect of motivation.

⁶⁶Hoban, C. F. "The School Journey as a Visual Aid," *School Life*, 13:33, October, 1927.

O'Shea⁶⁷ has reported an experiment in which pupils in grades five, six, seven, and eight were asked to read three types of passages: (1) a passage arousing "vivid interest," (2) a passage arousing "mild interest," (3) a passage arousing "very mild or no interest."⁶⁸ The achievement measured was limited to vocabulary. The data secured indicate that "mild interest in a reading passage is more favorable to vocabulary improvement than either great or little interest."⁶⁹

Bowman, whose study of pupil preferences of arithmetical problems was mentioned on page 29, also investigated the relation of preference to performance on a test. The following statements are quoted from his conclusions:

The most significant result . . . is the tendency for pupils of high ability, as measured in this study, to perform equally well on all types of problems, . . . On the other hand, pupils of lower ability more consistently prefer the pure computation type and exhibit a higher relative degree of performance on this type of problem. . . .

The inference may be made, then, that there is a tendency for the individual to select as his preference that problem, out of a group of problems, which he knows or thinks he will be more nearly successful in solving. Within the limitations of this study, we seem to be justified in drawing the further inference that the expectation of greater success leads the individual to prefer one problem over others, and that belief in success causes preference rather than that preference is a cause of successful performance.

It has been argued that arithmetical problems could be made more interesting to pupils by stating the problem more elaborately than is necessary for ordinary computation.⁷⁰ In a recent study⁷¹ elaborated statements, called "imaginative," were compared with conventional statements of the same problems.

Conventional statement: Margaret spent \$3.68 for handkerchiefs at 23 cents each, and gave one-fourth of them to her sister. How many did her sister get?

Imaginative statement: Margaret had been shopping all morning for Christmas presents. She had bought presents for her father and mother and brothers but could not decide what to get for her sister and several of her friends—there were so many things to pick from. Just then she saw some pretty handkerchiefs which were marked 23 cents each. These were just what she wanted, so she counted her money, found that she had \$3.68, and spent all of it for handkerchiefs. She kept out one-fourth of the handkerchiefs to give to her sister, and gave the rest to her friends. How many did she keep out to give to her sister?

⁶⁷O'Shea, H. E. "A Study of the Effect of the Interest of a Passage on Learning Vocabulary," *Teachers College, Columbia University Contributions to Education*, No. 351. New York: Bureau of Publications, Teachers College, Columbia University, 1930. 122 p. page 26.

⁶⁸O'Shea, *op. cit.*, p. 87.

⁶⁹For example, see:

Wilson, Estaline. "Improving the Ability to Read Arithmetic Problems," *Elementary School Journal*, 22:380-86, January, 1922.

⁷¹Wheat, H. G. "The Relative Merits of Conventional and Imaginative Types of Problems in Arithmetic," *Teachers College, Columbia University Contributions to Education*, No. 359. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 123 p.

Responses were secured from pupils in grades five to eight. Wheat interpreted his data as showing that "pupils in the intermediate grades are neither hindered nor helped in their problem practice exercises by problems of the imaginative type, when no limits are imposed upon the amounts of time of their practice periods."⁷² When the time was limited, the conventional problems were found to be superior as learning exercises.⁷³

One should not generalize from so few investigations, especially when they deal with only very restricted phases of the interests of pupils. These studies, however, suggest that in some cases the preferences of pupils should not be made an important criterion in the devising and selecting of learning exercises. In contrast with preferences for reading selections or the type of statement of arithmetical problems, preferences for composition topics seem more significant. If we inquire into the reason for the difference in the significance of pupil preferences for learning exercises, one possible explanation is that in some cases the preference refers to a fundamental aspect of the learning exercise and in other cases to only superficial and nonessential aspects. Obviously, a composition topic will be more effective as a stimulus when it is one about which the pupil has something to say. Hence the significant difference between composition topics that are "uninteresting" to pupils and those that pupils prefer⁷⁴ is not the mere fact of pupil preference. Instead, it is to be found in the relation of the topic to the previous experience of the pupils.

With reference to the significance of the preference of pupils for visual materials, it should be kept in mind that the criterion of the value of learning exercises based on such materials is to be found in the achievements of the pupils. In this connection it is interesting to note that Barr,⁷⁵ in his study of the differences between "good" and "poor" teachers, discovered that good teachers are most apt to take the initiative in providing visual materials over and above those provided by the school. For example, almost every "good" teacher had placed pictures in her classroom, had bulletin boards with clippings from newspapers and magazines, while the "poor" teachers had not.⁷⁶ Furthermore, the pupils of the good teachers had prepared maps, charts, and diagrams which were on exhibit in their classrooms.⁷⁷ The author leaves the topic with the comment that even the "good" teachers seemed to make

⁷²*Ibid.*, p. 62.

⁷³*Ibid.*, p. 104.

⁷⁴See pages 29-30.

⁷⁵Barr, A. S. *Characteristic Differences in the Teaching Performance of Good and Poor Teachers of the Social Studies*. Bloomington, Illinois: Public School Publishing Company, 1929. 127 p.

⁷⁶*Ibid.*, p. 57.

⁷⁷*Ibid.*, p. 58.

little use of the visual materials they or their students had provided.⁷⁸ While apparently not used very much by these "good" teachers, the visual materials present in their classrooms may have served, and probably did serve, to stimulate interest in the learning activities primarily based on other materials. The presence of visual materials prepared by the pupils themselves would seem to be an indication that such interest had been aroused. It may be possible that visual aids are of great importance for engendering such general controls of conduct as ideals, attitudes, appreciations, and abiding interests. It is evident that the experimentation on the value of visual aids has neglected these aspects of achievement in its emphasis on more specific abilities for which nonvisual materials may seem to be more effective.

Skinner and Rich⁷⁹ state in their conclusions that "the difference in attainment due to the use of visual aids is exceedingly small, if measured to the end of the period of visual instruction. But—and here is the important fact—there was a distinct gain, other factors being equal, in the retention of the information acquired, in interest in geography, and in 'pupil morale' in a wide sense."

Freeman states that, although the evidence on the point is less certain, "motion makes objects attractive and as a consequence attracts close attention and prompts to better learning, even though it is not necessary to an understanding of the subject."⁸⁰ The conclusion that might be drawn from the evidence cited is to the effect that motion pictures for use in stimulating the learning activity of children through interest must be used judiciously. If the use of films is not overdone, interest is aroused, but if films are long, or if they are used too frequently, the interest that would stimulate self-activity is replaced by passiveness.

Ross⁸¹ has reported an experiment in which it was found that the use of pictures in the teaching of history made the thought more vivid and lasting. It was also found that some pictures are of little or no help in this direction, and are occasionally a hindrance. The increase of vividness by the use of pictures with respect to science courses has been discussed by Miller.⁸²

As suggested on page 25, the evidence relative to the effect of pupil interests and preference upon the educative effect of learning

⁷⁸*Ibid.*, p. 59.

⁷⁹Skinner, C. E. and Rich, S. G. "Visual Aids in Geography: An Experiment," *Elementary School Journal*, 25:705, May, 1925.

⁸⁰Freeman, F. N., et al. *Visual Education*. Chicago: University of Chicago Press, 1924, p. 74.

⁸¹Ross, C. L. "The Value of Pictures in Teaching History," *Journal of Educational Research*, 17:113-16, February, 1928.

⁸²Miller, L. P. "The Contribution of Slides and Films to Science Teaching," *General Science Quarterly*, 11:13-17, November, 1926.

exercises is fragmentary. There are not sufficient data to support a generalization, but the present writers offer the following statement as a general principle: *Pupil preferences with respect to types of learning exercises is a secondary or supplementary criterion; hence, they should determine the type of exercise only when other things are equal.* These "other things" include, difficulty, definiteness of statement, relation to the previous experience of pupils, and compatibility with the objectives recognized. If the first three of these criteria are satisfied, and if the assignment is skillfully made, pupils will usually be "interested" in any learning exercises that are considered compatible with recognized objectives.

Other factors that affect the functioning of assigned exercises as stimuli. It appears that the stimulating effect of an assigned exercise depends upon its definiteness, its relation to the other learning exercises, its difficulty, its relation to the previous experience and interests of the pupils, the manner in which it is assigned, the attitude of the teacher, and the supplementary motivation procedures⁸³ employed.

*The effect of definiteness in learning exercises.*⁸⁴ Observation of school children indicates that, in general, definite learning exercises are more effective than those that do not make explicit and precise requests of the pupils. For example, a request to "do the multiplication exercises on page 87" appears to be more effective than the general request to "practice multiplication."

Several investigations furnish evidence in support of the contention that definiteness of learning exercises serves to motivate the doing of them. Reeder⁸⁵ employed assignments consisting of the types of exercises used in "new-type tests." Although there was no attempt to isolate the motivating effect of the definiteness of the learning exercises used, it is apparent that this characteristic did stimulate some pupils.⁸⁶ Jersild has reported, "It appears from this result that a direct interrogation constitutes a more intense stimulus than does a narrative statement, and will, accordingly, give rise to a more lively response."⁸⁷ Meyers⁸⁸ has reported an experiment in which it was found that a request to learn a list of words within a definite length of time resulted in achievement superior to that shown when no time limit was

⁸³These procedures are discussed in Chapter IV.

⁸⁴The motivating effect of definite objectives, which is a closely related topic, will be considered in the next chapter.

⁸⁵Reeder, E. R. "A Method of Directing Children's Study of Geography," *Teachers College, Columbia University Contributions to Education*, No. 193. New York: Bureau of Publications, Teachers College, Columbia University, 1925. 98 p.

⁸⁶*Ibid.*, p. 39f, 44.

⁸⁷Jersild, A. T. "Examination as an Aid to Learning," *Journal of Educational Psychology*, 20:609, November, 1929.

⁸⁸Meyers, G. C. "Learning Against Time," *Journal of Educational Psychology*, 6:115-16, February, 1915.

set. Alderman⁸⁹ has reported that the definiteness of the question-and-answer method results in achievement superior to that of the lecture method. In each of these cases the students appear to have been stimulated by the definiteness of the requests for learning activity.

The influence of the setting of a learning exercise. A learning exercise may occupy a setting in a series of sequentially organized exercises relating to a given topic. This relation to preceding and following learning exercises, if understood by the pupils, serves to promote the motivation of learning activity. Participation in activity requested by preceding learning exercises and the prospect of participation in activity called for by later exercises serves to create momentum. Douglass⁹⁰ has presented an illustration of the effectiveness of long but definite assignments in securing the motivation of learning activity. He states that he found the following conditions existing in a class in American history which he visited ten minutes after the class hour had begun:

There was no day-dreaming, no dreary repetition with attention on a mechanical level. There was every evidence of work going on, of minds in high gear. No student was compelled to listen to other students "re-hash" materials already covered. The assignment had been made several days before. *A whole day had been taken to lay out the work of this assignment and to introduce the class to it.*⁹¹

The influence of difficulty. Obviously, exercises of extreme difficulty cannot stimulate highly efficient learning activity. An example of the influence of extreme difficulty is found in the experiment of Weekes.⁹² The following conclusion taken from her report illustrates the influence on motivation of too great a difficulty.

There is danger that its involved sentence structure, its figures of speech, its decorative ideas, and its "unspoken message" may render poetry so meaningless to the immature reader that the result may be a dislike for poetry rather than a liking; or there may develop, quite early, preferences for that which has little or no literary value.

Another example of the influence of extreme difficulty may be given

⁸⁹Alderman, G. H. "The Lecture vs. the Question and Answer Method," *School Review*, 30:205-9, March, 1922.

⁹⁰Douglass, H. R. "The Long Unit Versus the Daily Assignment," *The High School*, 5:63-68, May, 1928. This is the first of a series of references on the same topic all of which are to be found in the same issue of this periodical.

For discussions of the relation of learning exercises to larger units of work, see:

Hanes, E. F. and McCoy, M. J. "Organization and Technique of a Teaching Unit in English Classics," *Supplementary Educational Monographs* No. 24. Chicago: University of Chicago Press, 1923, p. 137-50.

Hill, H. C. "A Course in Modern History," *Supplementary Educational Monographs* No. 24. Chicago: University of Chicago Press, 1923, p. 103-15.

McMurray, C. A. "The Large Unit of Instruction, A Basis for Lesson Planning," *Educational Administration and Supervision*, 11:338-39, May, 1925.

⁹¹Douglass, H. R., *op. cit.*, p. 64. (The italics are ours.)

⁹²Weekes, B. E. "The Influence of Meaning on Children's Choices of Poetry," *Teachers College, Columbia University Contributions to Education*, No. 354. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 50 p.

from the field of high-school chemistry. Powers⁹³ ascribes what he feels to be very poor achievement, as revealed by his standardized test, to the influence of material too difficult. In his opinion the chemistry curriculum of the high school is too advanced for high-school students. Learning activity in this subject is rendered difficult because of the multiplicity of the topics touched upon and because of the size and abstractness of the terminology. While Powers does not offer evidence that has a direct bearing on the influence of difficulty on motivation, it is logical to assume that one of the reasons for what he considers to be poor achievement is that the students lost interest because of the learning exercises being too difficult for them.

On the other hand, easy exercises may not be effective stimuli. Learning exercises must challenge the effort of a pupil if they are to stimulate him to activity. Woodrow⁹⁴ has described an interesting case which illustrates the result of failure to provide learning exercises of sufficient difficulty. A fourth-grade boy approximately ten years of age was discovered to have a mental age of nearly thirteen years. His achievement in the fourth grade was erratic and he did not show the improvement that might reasonably be expected of him. He seldom kept his attention on his school work, often losing interest in a topic after a few minutes. After this boy had been tested, it was recommended that he be given a special promotion. The encouragement resulting from being placed in a higher grade in which the work assigned was more compatible with his abilities so stimulated the boy that he received another special promotion.

The moral to be derived from this illustration is that in order to stimulate interest, school work must challenge a pupil with its difficulty. The expenditure of reasonable amounts of effort is satisfying. The construction of complex apparatus, the solution of a puzzling problem, and the acquisition of an understanding of a difficult passage—all engender pleasant feelings of satisfaction when such difficulties have been surmounted. The hurdling of obstacles with the attendant satisfactions stimulates the pupil to seek "other worlds to conquer." That this is true in mathematics has been shown by Powell⁹⁵ who made a study of problem material in high-school algebra. The following conclusion is reported:

⁹³Powers, S. R. "A Diagnostic Study of the Subject Matter of High School Chemistry," *Teachers College, Columbia University Contributions to Education*, No. 149. New York: Bureau of Publications, Teachers College, Columbia University, 1924. 84 p.

⁹⁴Woodrow, Herbert. *Brightness and Dullness in Children*. Chicago: J. B. Lippincott Company, 1923, p. 35.

⁹⁵Powell, J. J. "A Study of Problem Material in High School Algebra," *Teachers College, Columbia University Contributions to Education*, No. 405. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 100 p.

Too many difficult problems given at one time tend to lessen the interest of the pupil. The pupils, however, express a liking for difficult problems of certain types if only a few are introduced at a time and if these are well distributed among the ones of less difficulty.⁹⁶

The motivating effect of the time and manner of assignment. The motivating effect of a learning exercise depends upon the manner in which it is assigned and upon its relation to the activities of the pupil at the time of the assignment. Good learning exercises may be assigned in a manner suggesting to the pupils that they represent a bit of unavoidable drudgery. On the other hand, learning exercises may be assigned in a manner suggesting to the pupils that they are challenges that only the more capable and persistent pupils will be able to meet. The particular phraseology that the teacher uses and even her tone of voice may be potent factors.

The beginning or the end of a recitation hour is not necessarily the most effective time to make an assignment from the point of view of motivation. Frequently, in the course of a recitation opportunities will arise for making the assignment. For example, a pupil may ask a question that cannot be answered offhand. The teacher may respond to the question by making it the point of departure for an assignment for the next day. In the course of a recitation the teacher may discover weaknesses in achievement with respect to certain of the subject-matter previously assigned. The moment of discovery of such weaknesses is the most effective time for a remedial assignment. Mention of some item related to topics yet to be studied often affords an opportune moment for the assignment of a topic. For example, sometime during the discussion of the Louisiana Purchase, in an American history class, would be an effective moment for an assignment relating to the Lewis and Clark expedition. In the discussion of the Purchase mention that Jefferson was buying for the United States a practically unknown territory would be the cue for such an assignment.

The illustration of Bagley relating to the way in which one teacher made an assignment respecting Benedict Arnold was referred to on page 18. Another device which is often effective in the making of an assignment is the asking of questions that stimulate the curiosity of pupils. For example, the teacher may ask such questions as the following just prior to making an assignment: "How would you set about measuring the height of the flag pole in the school yard?" "Why does Mr. Graham, the garage man, advocate glycerine rather than denatured alcohol to keep automobiles from freezing up?" "What would happen if an epidemic of typhoid fever were to break out in one of the towns

⁹⁶*Ibid.*, p. 33.

a few miles up the river?" "If you were President Hoover, what steps would you take to promote law enforcement?"

It is an established psychological principle that the response a person makes to a stimulus depends upon his mental state or mind-set when the stimulus is applied. This principle was explicitly recognized in the systematic plan of teaching proposed by the Herbartians. The first of the "five formal steps" by which the plan is commonly designated, is called "preparation." During this phase of the teaching, the teacher asked questions and made comments that were designed to create an appropriate "frame of mind" in the pupils.⁹⁷ Making assignments at appropriate times and in an appropriate manner is an effective means of motivating learning activity. It either takes advantage of existing mind-sets, or creates appropriate ones. When the assignment is thus made, it fits into the matrix of pupil purposes.

The motivating effect of directions and suggestions for doing learning exercises. The effect of directions and suggestions for doing learning exercises on the achievement of pupils has been studied in certain of the supervised-study investigations.⁹⁸ In the experiment of Breslich⁹⁹ the teacher passed about the room while the students were studying and offered suggestions whenever it was evident that a student was in difficulty. Occasionally, the teacher interrupted the work of the class to give a direction, lest a mistake discovered should become general. The teacher in the experiment of Minnick¹⁰⁰ answered questions and made suggestions during the study period. The pupils in the experiment of Dunn¹⁰¹ were given directions for studying by wholes rather than by parts and were also given directions for outlining. In Heckert's¹⁰² experiment the pupils were given directions and suggestions as they prepared compositions in the presence of the teacher. In Beauchamp's¹⁰³ experiment the supervised-study pupils received directions for studying a paragraph to determine its central idea, in finding and answering questions on the material assigned, in reading

⁹⁷For evidence on the effect of mind-set, attitude and mood, see pages 43-45.

⁹⁸Some of the experiments in supervised study had as their experimental factors procedures for engendering good study habits. For a critical summary of supervised study experiments, see:

Monroe, W. S. and Engelhart, M. D. "Experimental Research in Education," *University of Illinois Bulletin*, Vol. 27, No. 32, Bureau of Educational Research Bulletin No. 48. Urbana: University of Illinois, 1930, p. 77-98.

⁹⁹Breslich, E. R. "Teaching High-School Pupils How to Study," *School Review*, 20:505-15, October, 1912.

¹⁰⁰Minnick, J. H. "An Experiment in the Supervised Study of Mathematics," *School Review*, 21:670-75, December, 1913.

¹⁰¹Dunn, G. A. "The Value of Supervised Study," *Teachers College Record*, 18:430-37, November, 1917.

¹⁰²Heckert, J. W. "The Effects of Supervised Study in English Composition," *Journal of Educational Research*, 5:368-80, May, 1922.

¹⁰³Beauchamp, W. L. "A Preliminary Experimental Study of Technique in the Mastery of Subject-Matter in Elementary Physical Science," *Supplementary Educational Monographs*, No. 24. Chicago: University of Chicago Press, 1923, p. 47-87.

through the entire assignment before beginning an analytical study of its parts, and in solving thought questions. The extent to which directions and suggestions were used in the experiment of Brown and Worthington¹⁰⁴ is found in the statement that supervised study consists of "directing the mental operations, whether they are reciting, being assigned a lesson, or working out an assignment."

It is significant that the findings of this group of experiments are universally in favor of supervised study of the kind investigated.¹⁰⁵ While some of the difference in gains must be credited to instruction, it is logical to assume that some was due to the fact that the pupils were motivated by the suggestions and directions given by the teacher. Suggestions and directions enable a pupil to use better methods of doing learning activity. They stimulate activity in that, in a sense, they constitute requests for activity. The pupil who in the absence of his teacher finds himself in difficulty is apt to give up his task. The pupil who, on receiving directions or suggestions from the teacher present, eliminates the difficulty in which he finds himself is stimulated to further activity.

Concluding statement. This chapter had as its purpose the discussion of the characteristics of learning exercises that are of immediate interest to pupils and the discussion of how learning exercises should be assigned in order to secure the strongest appeal. It was stated that interests are more fundamental than are preferences. Both should be considered in devising and selecting learning exercises, but preferences may be disregarded rather than to violate the more important criteria of good learning exercises: appropriate difficulty, definiteness of statement, close relation to previous experience of pupils, and compatibility with recognized objectives. It was urged that motivation is promoted by assigning learning exercises at appropriate times and in a manner that will stimulate the curiosity of the pupils or challenge them to expenditure of effort.

¹⁰⁴Brown, W. E. and Worthington, J. E. "Supervised Study in Wisconsin High Schools," *School Review*, 32:603-12, October, 1924.

¹⁰⁵There is considerable disagreement in findings when the whole group of supervised study experiments are considered. See: Monroe and Engelhart, *op. cit.*

CHAPTER IV

SUPPLEMENTARY PROCEDURES FOR SECURING INTENSIVE EFFORT AND PERSIST- ENCE IN LEARNING

The questions to be considered. The basic procedures for stimulating participation in desired learning activities have been discussed in the two preceding chapters. The supplementary procedures that may be employed for securing intense effort and persistence in learning remain to be considered. It is the purpose of this chapter to summarize briefly the experimental evidence relative to the motivating effect of the following conditions or procedures:

1. Appropriate mind-set, attitude, and mood
2. Definite objectives
3. Knowledge of progress in learning
4. Competition, individual and group
5. Quizzes and final examinations
6. Commendation
7. Reproof and sarcasm
8. Punishment
9. Prizes, honor rolls, and other distinctions
10. Conferences

Limitations of the experimental evidence. As will be apparent in the following pages, college students have been used as subjects in a number of investigations, and in several cases the activity motivated is not representative of learning in school. Tallying and writing the small letter "a" as rapidly as possible are examples of this. The unusualness of such activities may have functioned as a stimulus. The device evaluated would also have the advantage of novelty in an experiment, but this novelty would be lacking if the device were given repeated or prolonged use in ordinary school practice. It is probable, therefore, that benefits obtained under experimental conditions are greater than those that would be obtained with the same device under ordinary school conditions.¹

Critical examination of the reports of the studies reveals several other weaknesses in the experimental procedure, the most important of which probably is the failure to control adequately certain teacher

¹For a comparison of learning under experimental conditions and in ordinary school practice, see:

Norsworthy, Naomi and Whitley, M. T. *The Psychology of Childhood*. New York: The Macmillan Company, 1919, p. 197-99.

factors. It is likely that a motivation procedure that is employed effectively by one teacher may prove much less effective under another teacher. Another limitation is indicated by the individual differences of pupils. Averages show the general tendency, but they also obscure the effect upon individual pupils. Hence, when the experimental evidence strongly indicates the effectiveness of a given motivation procedure, it is important to bear in mind that the conclusion may not be true for all pupils. It is likely that there will be a few exceptions. The conclusions, therefore, reached in a single investigation should be considered tentative until corroborative evidence is available. Furthermore, one should be cautious in generalizing, especially when adults have been used as subjects or when the learning activity is not typical.

1. Mind-set, attitude, and mood. The mind-set of the pupil as a factor of his learning was emphasized by the Herbartians. The first of the "five formal steps" was designated as "preparation," and the purpose of the teacher during this phase of the lesson was to stimulate an appropriate mind-set.² Other schools of methodologists have pointed out the influence of this factor, and there is some experimental evidence to support the theoretical arguments. A study has been reported by Good³ in which differing mind-sets were induced in a group of high-school students prior to the assignment of a learning exercise. The importance of this factor is indicated in the varying amounts of achievement secured. The conclusions state that instructions urging the students to remember what they were about to study created the most favorable mind-set. Peterson⁴ has reported a class experiment in which it was discovered that when students were warned that recall would be expected, the learning was more effective both immediately and later. Jersild⁵ found that a pretest is a more effective device for securing appropriate mind-set prior to learning activity than is a narrative statement relative to the same subject-matter. Gates⁶ has shown that the presence of an audience induces a mind-set which results in superior performance. Dawson⁷ investigated the variation of the mental efficiency of children during school hours and reports a conclusion that is especially pertinent to this discussion. "It, therefore, seems legitimate to conclude that the superior output of the 10:30 period . . .

²"Apperceptive mass," was the term more generally used than "mind-set."

³Good, C. V. "The Effect of Mental Set or Attitude on the Reading Performance of High School Pupils," *Journal of Educational Research*, 14:178-86, October, 1926.

⁴Peterson, Joseph. "The Effect of Attitude on Immediate and Delayed Reproduction: A Class Experiment," *Journal of Educational Psychology*, 7:523-32, November, 1916.

⁵Jersild, A. T. "Examination as an Aid to Learning," *Journal of Educational Psychology*, 20:602-9, November, 1929.

⁶Gates, G. S. "The Effect of an Audience Upon Performance," *Journal of Abnormal Psychology*, 18:334-44, January-March, 1924.

⁷Dawson, S. "Variations in the Mental Efficiency of Children During School Hours," *British Journal of Psychology*, 14:362-69, April, 1924.

is due mainly, if not entirely, to the fact that this is the usual arithmetic hour." If this conclusion is true, then it is evident that the pupils achieved more because they would begin this hour with minds set for arithmetic activity. Waples⁸ has expressed the opinion that "it is often possible to direct interest toward a previously distasteful activity by convincing the subject that he has the required ability." This opinion should be verified experimentally, since, if true, it would prove an effective means of securing motivation by creating an appropriate mind-set.

While the experimental evidence is somewhat fragmentary, it would seem that a teacher is justified in utilizing certain devices for the purpose of engendering appropriate mind-sets prior to the assignment of learning exercises. For example, the teacher may be justified in introducing new subject-matter by recalling old subject-matter to which the new is related. Sometimes the teacher may find it effective, in the introduction of a new topic, to ask questions pertaining to the daily life of the pupils which have a bearing on the topic and which may give direction to the pupil's thinking.

Evidence of the effect of the pupil's attitude is afforded by a large number of investigations. In many cases, however, this evidence is somewhat indirect; therefore, the following summary is confined to those that furnish relatively direct information. Shaw and Crumpton⁹ experimented with junior high-school children who had been increasing in speed but not in quality of handwriting. Emphasis on the worth of good handwriting, a means of engendering an ideal or attitude in the pupils, proved very effective. The conclusions state, "*Attitude is a potent factor in the development of a skill.*" McCharles¹⁰ engendered the attitudes of pugnacity, friendliness, alertness, and relaxation in five groups of subjects in a psychological laboratory. The results were most significant with respect to the value of the pugnacious attitude in the solution of problems.

Some attitudes are a handicap in learning. This is apparent when we recognize that attitudes may be paired by placing together the ones that represent opposite reaction tendencies. For example "perseverance" and "vacillation" represent opposite tendencies.¹¹ If "perseverance" facilitates learning, "vacillation" would be expected to be a

⁸Waples, Douglas. "An approach to the Synthetic Study of Interest in Education: Part IV," *Journal of Educational Psychology*, 11:502-503, December, 1920.

⁹Shaw, Lena, and Crumpton, C. E. "The Attitude of the Child in Matters of Skill," *Elementary School Journal*, 30:218-22, November, 1929.

¹⁰McCharles, S. B. "The Effect of Attitude on Problem Solving," *Psychological Bulletin*, 21:194-5, April, 1924. (An abstract of a paper delivered at a meeting of the Western Psychological Association, Los Angeles, September, 1923.)

¹¹Perhaps it would be more appropriate to think of these two reaction tendencies as opposite extremes of the same attitude which might be called "persevering-vacillating attitude."

handicap. There is little experimental evidence concerning the attitudes that oppose learning. Trow¹² has reported in the conclusions of a laboratory investigation that an attitude of confidence in oneself does not imply superior achievement. Herriott¹³ has also reported that a self-confident attitude may be detrimental to achievement. His conclusions, however, in general support the belief that attitudes are important factors in school success. He states, "These data support the belief expressed by many authorities that traits, such as study habits and attitudes, are factors of success comparable to the seemingly more tangible and more usually measured factors, such as intelligence and previous preparation."¹⁴

The evidence with respect to attitudes is limited by the inadequacy of present measurements of these subtle traits. It would seem, however, that enough evidence has been presented to indicate their importance and to warrant the teacher's attention to them in her efforts to secure motivation. Appropriate attitudes may frequently be engendered in students by indirect means. For example, teachers may do much to engender an attitude favorable to certain kinds of learning activity by exhibiting such attitudes themselves. Sometimes it is helpful to call attention to the worth of certain skills in order to create an appropriate attitude toward the activities by which the skills are acquired.

The term "mood" is used here to designate a rather indefinite reaction tendency. It is ordinarily used to refer to certain states of mind, such as cheerfulness, despondency, and the like. Sullivan¹⁵ has reported a psychological laboratory investigation in which it was concluded that there is a low degree of correlation between mood and performance. While mood is not shown to be an important factor in this experiment, judgment with respect to mood should be suspended. It may be that mood is of sufficient importance to require the utilization of motivation devices to overcome its influence. Despondency in pupils may be a cause of failure to give attention to a lesson. It might be a factor in the creation of detrimental attitudes. In any case, efforts to secure cheerful moods in place of depressive ones would seem justifiable when the occasion demands.

2. Definite Objectives. The motivating influence of definite objectives has been evaluated in certain experiments. Several years ago

¹²Trow, W. C. "The Psychology of Confidence," *Archives of Psychology*, No. 67. New York: Columbia University, 1923. 47 p.

¹³Herriott, M. E. "Attitudes as Factors of Scholastic Success," *University of Illinois Bulletin*, Vol. 27, No. 2, Bureau of Educational Research Bulletin No. 47. Urbana: University of Illinois, 1929, 72 p.

¹⁴*Ibid.*, p. 44.

¹⁵Sullivan, E. T. "Mood in Relation to Performances," *Archives of Psychology*, No. 53. New York: Columbia University, 1922. 71 p.

Wright¹⁶ reported a psychological laboratory experiment in which the following conclusion is stated: "The subject accomplished more work when working under the mental stimulus of having a set task to be performed than he did when working without a definite aim." Chapman,¹⁷ Danielson,¹⁸ Hawley,¹⁹ and Newcomb²⁰ have reported investigations with school children. The following statements are taken from the conclusions by Chapman and Hawley:

The experiment suggests the necessity of searching for and assigning school tasks having very specific and definite demands²¹

A second conclusion is that if pupils have definitely established standards toward which to work, pride will enter in and the work will improve.²²

These experiments illustrate the effectiveness of definite objectives in the motivation of learning activity. Assignments that indicate the goals to be attained by the pupils are useful in securing motivation by this means. When the pupil knows just what tasks are expected of him, he is more apt to set about the doing of the task than when he is undecided with respect to "what the teacher wants."

3. Knowledge of progress in learning. Knowledge of progress in learning has been the subject of several laboratory experiments. In an early research by Binet and Vaschide²³ it was discovered that children exerted their muscular strength to the maximum when they were informed of the increasing, or decreasing force, they were exerting. Judd²⁴ found that a knowledge of progress was essential in learning to overcome the Müller-Lyer illusion, but a repetition of the experiment by Spencer²⁵ showed that improvement *could* take place without a knowledge of progress. Sullivan²⁶ found that the amount of time required in memorization is decreased by knowledge of progress and increased by knowledge of lack of progress. Heidebreder²⁷ studied the influence of knowledge of progress on reflective thinking. She found that when hypotheses are being formulated in answer to a problem,

¹⁶Wright, William. "Some Effects of Incentives on Work and Fatigue," *Psychological Review*, 13:23-34, January, 1906.

¹⁷Chapman, J. C. "Persistence, Success, and Speed in a Mental Task," *Pedagogical Seminary*, 31:276-84, September, 1924.

¹⁸Danielson, C. L. "A Study of the Effect of a Definite Course of Reading in General Literature Upon Achievement in Content Subjects with Children of Superior Mental Ability," *Journal of Educational Psychology*, 20:610-21, November, 1929.

¹⁹Hawley, W. E. "The Effect of Clear Objectives on the Teaching of Reading," *Journal of Educational Research*, 3:254-60, April, 1921.

²⁰Newcomb, R. S. "Securing the Maximum Amount of Work from Every Pupil," *Elementary School Journal*, 25:376-79, January, 1925.

²¹Chapman, *op. cit.*, p. 284.

²²Hawley, *op. cit.*, p. 260.

²³Binet, A. and Vaschide, N. "Expériences de Force Musculaire et de Pond Chez les Jeunes Garçons," *L'Année Psychologique*, 4:15-63, 1897.

²⁴Judd, C. H. "Practice Without Knowledge of Results," *Psychological Review Monographs*, Vol. 7, No. 1. New York: The Macmillan Company, 1905, p. 185-98.

²⁵Spencer, L. T. "The Effects of Practice Without Knowledge of Results," *American Journal of Psychology*, 34:107-11, January, 1923.

²⁶Sullivan, E. B. "Attitude in Relation to Learning," *Psychological Monographs*, Vol. 36, No. 3. Princeton, New Jersey: Psychological Review Company, 1927. 149 p.

²⁷Heidebreder, Edna. "An Experimental Study of Thinking," *Archives of Psychology*, No. 73. New York: Columbia University, 1924. 175 p.

evidence of partial success stimulates the thinker to suggest more hypotheses. The later steps of reflective thinking, including verification, were also stimulated by knowledge of success. Arps²⁸ and Johanson²⁹ have also reported laboratory experiments which show the value of knowledge of progress in learning.

A few investigators have studied the influence of this incentive on the achievement of elementary and high-school children. Kirby³⁰ conducted an experiment to determine the effect on learning of distribution of practice time and successfully motivated the experimental learning by informing his third and fourth-grade pupils of their progress. Anthony³¹ has reported the results of some effective remedial instruction in arithmetic in which the effectiveness was attributed to the use made of learning curves. The children were thus motivated by knowledge of their progress in learning. Panlasigui and Knight³² compared the achievement of fourth-grade pupils in arithmetic with and without self-rating by individual and class progress charts. In their conclusions they state, "We find that for the fourth grade a clear advantage results from the use of individual and class progress charts constructed to supply such valid measures of performance."

Beverley³³ found that the use made by elementary-school pupils of an English composition scale was an effective means of motivation, since it enabled the pupils to secure a knowledge of their improvement in writing. Allen³⁴ devised a graphical method for presenting grades to high-school pupils which motivated achievement because it revealed the amount of progress. Gilliland³⁵ has reported an experiment in which students were practiced in grading ten specimens of handwriting with the Thorndike Scale. Knowledge of the deviations of their ratings from the true value resulted in a decided improvement.

The influence of knowledge of progress has been the subject of study in several experiments that have been conducted with college students. Book and Norvell³⁶ reported a class experiment in psychology where

²⁸Arps, G. F. "Work With Knowledge of Results Versus Work Without Knowledge of Results," *Psychological Monographs*, Vol. 28, No. 3. Princeton, New Jersey: Psychological Review Company, 1920. 41 p.

²⁹Johanson, A. M. "The Influence of Incentive and Punishment Upon Reaction-Time," *Archives of Psychology*, No. 54. New York: Columbia University, 1922. 52 p.

³⁰Kirby, T. J. "Practice in the Case of School Children," *Teachers College, Columbia University Contributions to Education*, No. 58. New York: Bureau of Publications, Teachers College, Columbia University, 1913. 98 p.

³¹Anthony, Kate, et al. "The Development of Proper Attitudes Towards School Work," *School and Society*, 2:926-34, December 25, 1915.

³²Panlasigui, Isidoro, and Knight, F. B. "The Effect of Awareness of Success or Failure," *Twenty-Ninth Yearbook of the National Society for the Study of Education*. Bloomington, Illinois: Public School Publishing Company, 1930, p. 611-19.

³³Beverley, Clara. "Self-Measurement by Elementary School Pupils," *English Journal*, 9:331-37, June, 1920.

³⁴Allen, Elbert. "Graphical Representation of Grades of High School Pupils," *School Review*, 29:467-71, June, 1921.

³⁵Gilliland, A. R. "The Effect of Practice With and Without Knowledge of Results in Grading Handwriting," *Journal of Educational Psychology*, 16:532-36, November, 1925.

³⁶Book, W. F. and Norvell, Lee. "The Will to Learn, an Experimental Study of Incentives in Learning," *Pedagogical Seminary*, 29:305-62, December, 1922.

knowledge of results was found to be an effective stimulus in learning to write the letter "a" as rapidly as possible. Ross³⁷ studied the influence of this factor on achievement in "tallying." The members of the groups were practiced with varying amounts of knowledge of their results. His conclusions state that, "even in highly motivated groups, as undoubtedly these were, the addition of a single other motivating factor, namely, knowledge of results, is sufficient to give the pupils with such knowledge a distinct superiority over the others, and the degree of superiority is roughly proportional to the amount of information possessed." Harrelson³⁸ ascribes the gain in reading ability of a group of college students to the fact that they were stimulated by knowledge of their improvement in rate and comprehension. Deputy³⁹ has reported an experiment in which the achievement of college students was effectively motivated by short weekly quizzes. While some of the stimulation must be ascribed to the tests, as such, it is evident that a portion of it must be credited to the knowledge of progress furnished by the frequent test scores.

The findings of the studies referred to are almost unanimously in favor of the contention that knowledge of the progress of learning is an effective stimulus. It would be difficult to find another group of experiments in which there is as great agreement among the conclusions. What little disagreement there is, does not appear to affect the issue. For example, while Spencer found that it is possible to learn to overcome the Müller-Lyer illusion without knowledge of results, he does not contend that it is more profitable to do so.⁴⁰ Sullivan reported that knowledge of failure caused individuals to be slower in memorizing, while knowledge of success increased the rate of learning.⁴¹ The evidence on this point is fragmentary, but it would seem to be more desirable to emphasize the successes of pupils in learning rather than to lay stress on their failures. It is probably true that the most effective way to utilize this incentive in learning is to use it in connection with encouragement, and this, of course, implies emphasis on successes rather than on failures.⁴²

4. Competition, individual and group. Individual competition and group competition have been studied as incentives to learning in a num-

³⁷Ross, C. C. "An Experiment in Motivation," *Journal of Educational Psychology*, 18:337-46, May, 1927.

³⁸Harrelson, P. V. "The Effect of Knowledge of Results Upon Oral and Silent Reading," *Peabody Journal of Education*, 1:78-85, September, 1923.

³⁹Deputy, E. C. "Knowledge of success as a Motivating Influence in College Work," *Journal of Educational Research*, 20:327-34, December, 1929.

⁴⁰Spencer, *op. cit.*

⁴¹Sullivan, E. B. "Attitude in Relation to Learning," *Psychological Monographs*, Vol. 36, No. 3. Princeton, New Jersey: Psychological Review Company, 1927, p. 141-42.

⁴²The influence of encouragement, or commendation on achievement is discussed on pages 51 to 54.

ber of experiments, and in some of these, their relative effectiveness has been investigated. In addition to informing the subjects relative to their progress, Binet and Vaschide⁴³ aroused the spirit of competition by informing each subject with respect to his standing in the group. Sometimes the experimenter remarked, with effective results, that a comrade did just a little better. Whittemore⁴⁴ conducted a laboratory experiment for which the following conclusion is stated:

All subjects turn out more work when competing than when not competing. All subjects do poorer work when competing than when not competing. The subjects least capable in speed profit most from competition.

Allen⁴⁵ devised a graphical method of presenting grades to his pupils that stimulated them to greater achievement, because the spirit of competition was aroused. Each student observed his standing with respect to the others in the class. Mead⁴⁶ found that the possibility of winning exemption from handwriting practice was an effective stimulus to handwriting achievement. Triplett⁴⁷ discovered that older children do better under competition than young, nervous, or excitable children and that girls respond better to competition than boys.

Bykowsky⁴⁸ and Kirby⁴⁹ have reported experiments in which group competition was shown to be an effective device in the motivation of learning activity. Moede⁵⁰ and Whittemore⁵¹ found group competition to be superior to individual competition. Whittemore states, "Most subjects seemed to work slightly faster when cooperating in groups which, in turn, are in competition with other groups not present, but recognized, than when competing against one another." Sims⁵² and Maller⁵³ found as a result of two recent and comprehensive experiments conducted by them that individual competition is significantly superior as an incentive to achievement than group competition. Maller states, "Children appear to be more *persistent* and less affected by fatigue in their work for a personal gain than when engaged in work on a group project with no personal recognition."⁵⁴

⁴³Binet and Vaschide, *op. cit.*

⁴⁴Whittemore, I. C. "The Influence of Competition on Performance: an Experimental Study," *Journal of Abnormal Psychology*, 19:236-53, October-December, 1924.

⁴⁵Allen, *op. cit.*, p. 471.

⁴⁶Mead, C. D. "The Effect of Exempting Pupils Proficient in Handwriting," *Journal of Educational Psychology*, 10:219-29, April, 1919.

⁴⁷Triplett, N. "The Dynamogenic Factors in Pace-Making and Competition," *American Journal of Psychology*, 9:507-33, 1898.

⁴⁸Bykowsky, Jaxa, *Badania Eksperymentalne Nad Znaczeniim Wspolzawodnictwa*. Warszawa, 1923. An experiment conducted in Poland and referred to by Maller. See footnote No. 53.

⁴⁹Kirby, *op. cit.*

⁵⁰Moede, W. *Experimentelle Massenpsychologie*. Leipzig, 1920. This experiment is also described by Maller.

⁵¹Whittemore, *op. cit.*, p. 253.

⁵²Sims, V. M. "The Relative Influence of Two Types of Motivation on Improvement," *Journal of Educational Psychology*, 19:480-84, October, 1928.

⁵³Maller, J. B. "Cooperation and Competition," *Teachers College, Columbia University Contributions to Education*, No. 384. New York: Bureau of Publications, Teachers College, Columbia University, 1929. 176 p.

⁵⁴*Ibid.*, p. 162.

The evidence presented in these experiments does not justify a contention that the utilization of competition is always desirable. Whittemore⁵⁵ showed that his subjects increased in amount of work done and in speed with which the work was done, but decreased in quality. Triplett⁵⁶ found that young, excitable, or nervous subjects were adversely affected by competition. The conclusions relative to the comparative effectiveness of group versus individual competition are opposed to one another, although a better case seems to be made for individual competition. It may be that excessive use of competition is undesirable, since it substitutes other objectives for those recognized as educational. It may also be true that competition does not yield permanently desirable outcomes, in that achievement may subside to its original level when competition has been removed. However, there may yet be occasions when this device—either individual or group competition—may be used effectively to bring a class of pupils out of a slump in learning. It may be an effective procedure to restore morale in a group that has become bored with the monotonous routine of ordinary learning exercises in school, and its occasional judicious use for this purpose appears justifiable.

5. Quizzes and final examinations. The motivating influence of quizzes and final examinations may be due to the fact that tests aid in securing a mind-set appropriate to study for the purpose of remembering. Quizzes also give direction to learning, since they indicate to the pupils what was expected of them in their past study. They use such knowledge in preparation for the next quiz. Another reason for the motivating influence of tests is that they are an effective means of informing pupils with respect to their progress in learning. A number of experiments have been reported that indicate the value of quizzes and final examinations as motivating influences.

Symonds and Chase⁵⁷ conducted an experiment in which the motivating influence of frequent testing was compared with the motivating influences of discussions of vocational need of the abilities practiced. While the experiment may be criticized with respect to the remoteness of the need discussed from the present lives of the pupils, the results of the experiment are significant with respect to the value of test motivation. The authors state that test motivation as administered to one of the groups in this experiment is equivalent in value to "about five sheer repetitions" of the subject-matter to be learned. Deputy⁵⁸ in his ex-

⁵⁵Whittemore, *op. cit.*, p. 253.

⁵⁶Triplett, *op. cit.*, p. 533.

⁵⁷Symonds, P. M. and Chase, D. H. "Practice vs. Motivation, *Journal of Educational Psychology*, 20:19-35, January, 1929.

⁵⁸Deputy, *op. cit.*

periment previously referred to, used three groups of college freshmen for which the motivating influences of daily quizzes, weekly quizzes, and oral reviews were compared. The results are favorable to the more frequent testing. It should be mentioned, however, that when the groups were rotated, the class which was not accustomed to frequent testing did not react favorably to it. Harrelson⁵⁹ found that improvement in reading of twenty-three college students was motivated by a daily test of reading rate and comprehension. While the techniques used by Schutte⁶⁰ have been criticized for abnormal conditions produced,⁶¹ his conclusion may be included with those favorable to final examinations. He states, "that with the type of students involved in the experiment, the knowledge that there will be a final examination produces worth while results."⁶² In the field of arithmetic, four experiments have been reported, the conclusions of which are favorable to the belief that tests are an effective means of securing motivation.⁶³

The motivating influence of tests and examinations is due partially to the fact that pupils substitute them as objectives for those recognized as educational. This is done, possibly, because an immediate goal to be attained is less abstract than a remote one. Odell⁶⁴ has mentioned this as a criticism of tests and examinations and has answered the criticism with the contention that this is not an inherent fault of examinations but of the way they are constructed and administered. Correctly constructed and administered examinations motivate the pupils in the direction of recognized educational objectives. To do this requires that the examinations be constructed in harmony with the educational objectives and administered with sufficient frequency to eliminate cramming. There seems to be little reason to doubt that tests and examinations may be utilized by the teacher as one of the most effective of supplementary motivation devices.

6 and 7. Commendation versus reproof and sarcasm. There have been a number of experiments in which the motivating influence of

⁵⁹Harrelson, *op. cit.*

⁶⁰Schutte, T. H. "Is there Value in the Final Examination?" *Journal of Educational Research*, 12:204-13, October, 1925.

⁶¹Monroe, W. S., et al. "Ten Years of Educational Research," *University of Illinois Bulletin*, Vol. 25, No. 51, Bureau of Educational Research Bulletin No. 42. Urbana: University of Illinois, 1928, p. 81.

⁶²Schutte, *op. cit.*, p. 213.

⁶³Ballou, F. W. "Improving Instruction Through Educational Measurement," *Educational Administration and Supervision*, 2:354-67, June, 1916.

Krause, A. K. "Why Monroe Diagnostic Tests in Arithmetic?" *Contributions to Education*, Vol. 2. Yonkers, New York: World Book Company, 1928, p. 15-17.

O'Brien, F. P. "Co-operative Experiment Pertaining to Instruction in Arithmetic," *American Education*, 31:219-21, February, 1928.

Wertheimer, J. E. "Some Results of Monroe's Diagnostic Tests in Arithmetic," *Journal of Educational Psychology*, 11:109-12, February, 1920.

⁶⁴Odell, C. W. *Traditional Examinations and New-type Tests*. New York: The Century Company, 1928, p. 10-15.

commendation and reproof has been compared. Gates and Rissland⁶⁵ have reported an experiment in which three groups of college students were given a test; immediately praised, reproofed, or ignored, and tested again. The authors state that, "it is better to make some comment about the score than to make none: that it is a little better to make an encouraging than a discouraging remark: that relatively poor individuals are more likely to be unfavorably affected by discouragement than are relatively proficient persons" Briggs⁶⁶ has reported an experiment in which eight classes of junior high-school pupils were alternately commended or reprimanded prior to taking examinations. The conclusions state that, "Eighty-seven percent of the pupils made better scores after commendation and encouragement." Gilchrist⁶⁷ has reported an experiment in which two groups of college students were given a test in English; one group was commended; the other, censured; and both tested again. While the groups were not equivalent at the start, the large difference in mean gains would seem to be significantly favorable to praise rather than to reproof. It is interesting to note that good students were hurt by reproof, while the poor students were benefited.

Hurlock has reported two experiments on this problem. In the first,⁶⁸ three carefully equated groups of elementary-school children were praised, reproofed, or ignored with respect to their scores on an intelligence test. After this treatment the test was repeated. Significant differences in gains were reported for praise versus its absence and reproof versus its absence, but no significant difference was found with respect to the comparative influence of praise and reproof. The conclusions state that, on the whole, they are of equal value. It is further stated that older children and boys respond more to these incentives than younger ones and girls. Praise was found to be superior for inferior children and reproof was found to be more effective with superior children. Although the differences are slight, negroes were found to react more favorably to praise, and white children, to reproof. In the second experiment,⁶⁹ four groups of elementary-school children were used. After careful equating with respect to initial ability in adding, chronological age, and sex, the members of the first group were praised in the presence of their classmates, the members of the second

⁶⁵Gates, G. S. and Rissland, L. W. "The Effect of Encouragement and Discouragement Upon Performance," *Journal of Educational Psychology*, 14:21-26, January, 1923.

⁶⁶Briggs, T. H. "Praise and Censure as Incentives," *School and Society*, 26:597-98, November 5, 1927.

⁶⁷Gilchrist, E. P. "The Extent to which Praise and Reproof affect a Pupil's Work," *School and Society*, 4:872-74, December 2, 1916.

⁶⁸Hurlock, E. B. "The Value of Praise and Reproof as Incentives for Children," *Archives of Psychology*, No. 71. New York: Columbia University, 1924. 78 p.

⁶⁹Hurlock, E. B. "An Evaluation of Certain Incentives Used in School Work," *Journal of Educational Psychology*, 16:145-59, March, 1925.

group were reproofed, the members of the third group heard this praise and reproof, and the fourth group, used as a control group, was taught separately. The conclusions state that praise is most effective, reproof is somewhat effective, and hearing praise and reproof of others is less effective but is still an influence. These conclusions are in agreement with those of the first experiment, in that inferior children are most responsive to praise, while superior children are most responsive to reproof. Older and younger children, however, were found to be almost equally responsive to these incentives. Good⁷⁰ has reported an experiment in which a small group of high-school freshmen were encouraged, discouraged, requested to skim, or urged to remember prior to learning. The results are not particularly significant with respect to encouragement and discouragement, both of these incentives comparing unfavorably with the other two.

Laird⁷¹ has presented the results of a questionnaire study in which "ninety-two students in educational psychology reported in detail their actual responses to different incentives used by their high-school teachers." Reprimands in public had a bad effect, according to the reports of these students, but private reprimands had a good effect. Public sarcasm on the part of an instructor was reported to be more ineffective than public reprimand. Sarcasm in private has a beneficial effect, but less so than private reprimand. Private ridicule was reported to be slightly beneficial, but public ridicule like sarcasm and reprimand was found to be detrimental to work. Public praise was reported to be an effective incentive. Briggs⁷² has presented an excellent discussion of sarcasm. The point of view of the article is that there is no place for real sarcasm in the schools. The author states, "Ideal teaching invites and encourages spontaneity and cooperation. Sarcasm inhibits the former and makes the latter difficult."⁷³

The conclusion which may be drawn from an examination of the findings of these investigations is that, as a rule, commendation is more beneficial to learning than is reproof. However, in certain situations and with certain individuals reproof may be more appropriate. For example, the use of the incentive of praise may be more effective with nervous or excitable individuals, while reproof may be more effective with individuals of a more phlegmatic type. It may be that reproof is more effective in activities involving skills of a lower order, while praise is more beneficial when higher order abilities, such as

⁷⁰Good, C. V. "The Effect of Mental Set or Attitude on the Reading Performance of High School Pupils," *Journal of Educational Research*, 14:178-86, October, 1926.

⁷¹Laird, D. A. "How the College Student Responds to Different Incentives to Work," *Pedagogical Seminary*, 30:358-65, December, 1923.

⁷²Briggs, T. H. "Sarcasm," *School Review*, 36:685-95, November, 1928.

⁷³*Ibid.*, p. 689-90.

those needed in creative activities, are involved. These points should be investigated.

The research on praise and reproof is open to serious criticism from the standpoint of experimental techniques. The situation in each of the experiments reviewed here cannot be characterized as normal. Furthermore, each of the experiments evaluated the effect of praise or reproof over a very short interval of time. Research is needed on the effects of praise and reproof in ordinary teaching situations and with respect to their more permanent effects.

8. Punishment. Johanson⁷⁴ has reported a laboratory experiment in which punishment was found to be an effective stimulus. The author is of the opinion, "that a state of much keener attention, produced by an incentive (knowledge of previous score) and by the expectant punishment (electric shock), motivates reactions very much prompter than those normally obtained under quieter and more restful conditions." Punishment was found to be even more effective than knowledge of previous score. Rexroad⁷⁵ has performed a similar experiment. He states that punishment has disruptive, instructive, and incentive effects. Some interesting conclusions with respect to the incentive versus disruptive effects of punishment are presented:

The incentive effect shows itself in the rapid adoption of a scheme or plan for learning any code and in greater care to avoid errors throughout the performance.

The disruptive effect is in inverse proportion to the thoroughness with which the habit is established, and consequently will offset the incentive effect during the learning of a code, but will be offset by the incentive effect after the code is learned.

Laird⁷⁶ also reported in his questionnaire investigation of incentives that extra work assigned as punishment was not effective as a stimulus to achievement.

The research on this incentive to learning is fragmentary. The psychological laboratory experiments are suggestive in that they appear to justify the occasional use of punishment as a stimulus to learning. The experiment of Rexroad would indicate that punishment, when used, should be employed at the stage in learning when skills are almost perfected. In other words, it should serve as a stimulus to prevent careless reversion to achievement lower than that which the individual is capable. It is difficult to apply the findings of these psychological experiments to school practice, since the findings may not be true with respect to school children, and because present educational theory

⁷⁴Johanson, A. M. "The Influence of Incentives and Punishment," *Archives of Psychology*, No. 54. New York: Columbia University, 1922. 52 p.

⁷⁵Rexroad, C. N. "Administering Electric Shock for Inaccuracy in Continuous Multiple-choice Reactions," *Journal of Experimental Psychology*, 9:1-18, February, 1926.

⁷⁶Laird, *op. cit.*, p. 365.

frowns upon punishment, at least of the corporal variety. Occasions, however, arise when the teacher may stimulate the achievement of capable individuals by the judicious use of such punishments as denial of privileges and the like.

9. Prizes, honor rolls, and other distinctions. Two experiments have been reported in which the incentive studied was a prize or a distinction. Cash⁷⁷ motivated a single group of seventy-five pupils by the offer of a cup in an interclass efficiency contest. The cup was to be awarded for improvement in attendance, scholarship, deportment, extra-curricular activities, and so on. The conclusions state that tardiness and failure decreased. Knight and Remmers⁷⁸ have reported a unique experiment in which the achievement of ten college freshmen in arithmetic activity was stimulated by their desire to join a fraternity. The freshmen were informed that their election to membership was contingent on their achievement in arithmetic. The conclusion of this experiment is given below.

The above data support the following assertion: The difference between a genuine motivation such as the freshmen had, and the kind of motivation a college class contains, is a difference which not only offsets extreme fatigue, but further offsets freshmen vs. junior ability, and in addition produces twice as much work per unit of time with equal accuracy.⁷⁹

Three questionnaire studies have been reported on this problem. Laird⁸⁰ reported that college students feel that they are better stimulated by such incentives as honors to be awarded at commencement, membership in honorary fraternities, and membership in social fraternities than by such negative incentives as ridicule, reprimand, and so on. Weaver⁸¹ collected data by means of a questionnaire for the purpose of determining contemporary practice and opinion relative to the naming of honor students. The naming of honor students was reported by 87 per cent of the 151 high schools. "Three of the fifteen state officials appealed to oppose the naming of honor students; four are doubtful, and eight favor it with certain limitations." Wible⁸² secured data by means of a questionnaire administered to twenty-one hundred high-school students and of an examination of records concerning the effectiveness of the weighted credit procedure over a period of years. His findings are expressed in the following quotation.

⁷⁷Cash, L. E. "Motivation in the Small High School Through Interclass Efficiency Contests," *School Review*, 35:121-24, February, 1927.

⁷⁸Knight, F. B. and Remmers, H. H. "Fluctuations in Mental Production. When Motivation is the Main Variable," *Journal of Applied Psychology*, 7:209-23, September, 1923.

⁷⁹*Ibid.*, p. 223.

⁸⁰Laird, D. A. "How the College Student Responds to Different Incentives to Work," *Pedagogical Seminary*, 30:366-70, December, 1923. (A continuation of the report of the investigation referred to on page 53.)

⁸¹Weaver, H. B. "Should There Be Honor Students at High School Graduation?" *School Review*, 32:529-33, September, 1924.

⁸²Wible, J. E. "The Effects of Weighted Credit in the Lincoln High School, Lincoln, Nebraska," *School Review*, 37:753-59, December, 1929.

(1) Approval of parents affected the scholarship of the greatest number of pupils, and it was considered the most forceful factor in encouraging high marks. (2) With the exception of parent approval, weighted credit was the most effective scholarship incentive, as judged by both the extent and the potency of influence. (3) The honor roll offered some encouragement to about one-half of the pupils but was ranked first by only 4.1 per cent of the pupils. (4) Senior prizes were a negligible factor. (5) Accelerated or superior pupils were less concerned with teacher approval and eligibility requirements than were other groups. (6) Eligibility for athletics and other competitive activities had more effect on retarded pupils than on any other group.⁸³

Lewis⁸⁴ presents a discussion of these incentives which will prove useful to school administrators who desire to employ some of them. Holmes⁸⁵ has reported on the successful use of the honor roll as a stimulus to scholarship in one high school. The experiment of Mead⁸⁶ supports the belief that awards are stimulating to scholarship. Exemption from otherwise required work is undoubtedly a coveted distinction in the minds of pupils.

Prizes, honor rolls, and other awards have apparently some influence in stimulating scholarship. This influence may be due both to the spirit of competition aroused and to the desire for emulation. Such devices must be used judiciously, however, or it is likely that they will substitute less desirable aims for the more desirable objectives of education. The pupils may be given the feeling, by the judicious employment of such devices, that scholarship is considered as meritorious as prowess in athletics.

10. Conferences. The students answering Laird's questionnaire expressed the opinion that conferences with teachers or with parents are stimulating to learning activity.⁸⁷ It is probable that such conferences may be beneficial because of the opportunity that they afford for the utilization of several motivating devices. The student may be informed of his needs with respect to his school work so that he acquires a better mind-set or attitude toward his work. He may acquire a more definite understanding of the objectives that have been set for him. The teacher may utilize the opportunity afforded by a private conference to acquaint the student concerning his progress. Attitudes of competition and of cooperation may be engendered if occasion demands. Finally, commendation may be given, if deserved, or if it is likely to prove beneficial, reproof may be administered for past failure to achieve. The conference should be included as a motivation device,

⁸³*Ibid.*, p. 757.

⁸⁴Lewis, G. T. "Incentives to Higher Scholarship," *School Review*, 33: 131-38, February, 1925.

⁸⁵Holmes, C. W. "Honor Rolls as an Aid to Scholarship," *School Review*, 36:465-68, June, 1928.

⁸⁶Mead, C. D. "The Effect of Exempting Pupils Proficient in Handwriting," *Journal of Educational Psychology*, 10:219-28, April, 1919.

⁸⁷Laird, *op. cit.*, p. 363-65.

since it affords an opportunity for the utilization of several of the other devices.

Conclusion with respect to supplementary procedures. It should be emphasized in concluding this discussion of supplementary procedures for securing intensity of effort and persistence in learning that the success with which these procedures are used is dependent on the individuals to whom they are applied and the appropriateness of the situations. Certain of the devices seem to be worthy of more frequent use than the others:

1. Engendering suitable mind-sets, attitudes, or moods.
2. Acquainting the pupils of definite objectives.
3. Informing the pupil of success in learning.
4. Testing achievement frequently.
5. Commending where commendation is justified.
6. Confering when a conference will prove stimulating.

The following devices should be employed less frequently, and then only with considerable caution:

1. Informing the pupil of failure in learning.
2. Arranging competitions.
3. Administering reproof or punishment.
4. Awarding prizes, honors, and other distinctions.

CHAPTER V

IN CONCLUSION

The reader who has studied the preceding chapters in sequential order will probably secure a better perspective of the topic of motivation if he reviews Chapter II. In that chapter the importance of purposeful activity was emphasized, and the procedures to be employed in stimulating a desire to learn were pointed out. Chapter III dealt with the stimulation of learning activity by means of assigned exercises, and Chapter IV had to do with what we have called supplementary procedures. The present writers take the position that the procedures described in Chapters III and IV are means to be used primarily when appropriate pupil purposes are not present or cannot be stimulated. They are also means that may be employed for supplementing the activities growing out of pupil purposes. It has been said that classrooms in which the best motivation prevails are characterized by the absence of devices to stimulate pupil activity. Such statements are not intended to mean that the teacher should never employ motivation devices. A teacher should be prepared to introduce an appropriate device when there is a need for doing so, but the teacher who constantly appeals to pupil preferences or employs special devices will probably find that other phases of her instruction are faulty.

Another point that should be noted in this concluding statement is that mere activity does not insure learning. There must be both focalization of attention and persistence of effort. In other words there must be a *desire to learn*. Consequently, the teacher's effort should not be merely to stimulate activity. If she fails to stimulate a desire to learn, the pupil activity secured will not be highly educative.

Finally, it may be observed that the teacher should not approach her pupils with the attitude that they dislike school work and are reluctant to do the learning exercises that may be assigned. Pupils are interested in school work. They have purposes that may be capitalized. Other purposes may be stimulated. Most of them will respond to appropriate learning exercises. If the teacher has a real interest in children and in teaching, if she approaches her pupils with the attitude that doing the exercises assigned is an interesting and challenging activity, the problem of motivation will tend to disappear. Motivation procedures and devices will be needed only to supplement the stimulating effect of other instructional procedures.

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